



SEQUENCE LISTING

<110> SHEN, BEN
LIU, WEN
CHRISTENSON, STEVEN D.
STANDAGE, SCOTT

<120> GENE CLUSTER FOR PRODUCTION OF THE ENEDIYNE ANTITUMOR
ANTIBIOTIC C-1027

<130> 407T-896010US

<140> 09/478,188
<141> 2000-01-05

<150> 60/115,434
<151> 1999-01-06

<160> 118

<170> PatentIn Ver. 2.1

<210> 1
<211> 42000
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
C-1027 gene cluster sequence

<220>
<223> orf; relative position 658-11

<220>
<223> orf; relative position 1478-930

<220>
<223> orf; relative position 2713-1649

<220>
<223> orf; relative position 3238-2851

<220>
<223> orf; relative position 4971-3442

<220>
<223> orf; relative position 5982-7478

<220>
<223> orf; relative position 9900-7573

<220>
<223> orf; relative position 11349-9982

<220>

<223> orf; relative position 28590-29588
 <220>
 <223> orf; relative position 29632-31197
 <220>
 <223> orf; relative position 31280-32590
 <220>
 <223> orf; relative position 32809-34392
 <220>
 <223> orf; relative position 35274-34458
 <220>
 <223> orf; relative position 17924-16653
 <220>
 <223> orf; relative position 16653-15919
 <220>
 <223> orf; relative position 15922-14690
 <220>
 <223> orf; relative position 14643-14212
 <220>
 <223> orf; relative position 13012-14079
 <220>
 <223> orf; relative position 12835-11351
 <220>
 <223> orf; relative position 25564-24986
 <220>
 <223> orf; relative position 24702-23566
 <220>
 <223> orf; relative position 22878-21424
 <220>
 <223> orf; relative position 21407-19926
 <220>
 <223> orf; relative position 19929-19267
 <220>
 <223> orf; relative position 19191-18031
 <220>
 <223> orf; relative position 35938-35516
 <220>
 <223> orf; relative position 27214-28593

<220>
<223> orf; relative position 25815-27170

<220>
<223> orf; relative position 23546-22875

<220>
<223> orf; relative position 35274-34458

<220>
<223> orf; relative position 37559-38938

<220>
<223> orf; relative position 40986-39367

<400> 1
gtcgactcta gaggatcccg ggtgcggagt aggggttacg gacgaaggag ggggtgcccg 60
cgacgcctgc ggcgaagggc ggttccttga gttcgaggcc ggtggcgagg acgacgtggt 120
ccgcgtcgag gatctgcgtg tcggggagcg gcccaggggc cagccccctc gtcaggtagc 180
gggtgaggcc cctgacggtc acctcgaagc agcggtcgtg ggaccggggc tcgagcgctt 240
ccccgtccgc ttccacaagg acgacgcccg gacaggactc ccgtgcgggc tcgaccagtc 300
gggcgtcgag gtagtccttg aagatgcggc gggggggcgg gccctgttcg gtgaacttcc 360
acgaagccca gcgcgggggc cagtcgcgcc ggtcggcctc ctgggtggcc cagttgatga 420
agtcgagcac gtccctcgcg aacaccgaca tccctgcggc ctggatattg aagacgtggt 480
cccaggggtt gccgtcacgg tgataggcga cgccggccga gcggtaggcg gcgcgccgct 540
ccaggaggac gacttccagc ggtcttctcg cgaaatgaag caggcgatat gcggtcgccg 600
tgccctgccag gcccgccctt acgaccagca ccctggggcg cgcacccgtc atgcccata 660
agcctcccc gctgactcag ggcggcgcg gtgcgcgtcc cgtcgggtgc ctgcgtgact 720
ggaagttccc tgacctggcg tcaactccac tgatccgtaa ggggatcgcg ggagtggata 780
cgggtcaggc cgtgcacgat cgtggcacca gacagatcac cagtcgata ggcactcgtg 840
agccgcgccc ggggctcgac ggggcggggc accggcaggg gcggccgcgt gatcagccgg 900
agcctgtccg ggggcgtgcg tcgggggcgt cagctgtcga tgcggggaac gccagggacg 960
tcgatctccg tcggggcgta gtggttgaag tagttggtg agaggttcac ggccacgtgg 1020
acgaagacct cggcgagctc ggtgtccgtc catccctgtg ccacggccgc gttccacgag 1080
gcgtcagacg cctcgcgccac ttccgcggcg atctccctgg ccacctggac cagtgtctcg 1140
agcttcacgt cgtcgcgggg cgtcccccg cgaatcgcca cggctctctc cagcgtgaaa 1200
ccgcgcacct tcgcgcacac cgtgtgcgcc gcctggcagt acgcgcacgc gtcgaccgcg 1260
cccacggcga gggcgatcgc ctgcggtgtg cgggcgtcga acgttccatg ttccggcgacg 1320
gctccgggtg tcgcggcgta ggtttccagg accacggggg aatggggccat tcccccgtag 1380
atgttgagca ctgcgccgaa ccgcttctcc agtcggcgca ggatgtctcc gccggctgcg 1440
ggtgcgggtg cgatggtgtg gacgggaatc cgcggcatgg gaatgcctct cctcgtagtg 1500
atgggagttc ctgcgtccctc cagtctgccc aagcacctcc cccggtgagc tgtcccgggc 1560
gccctccggc cccttctagg caggtcgccc ggtggtgcgg cccaggacg tcacctcgcc 1620
gcaccaccgg gagccccgag gggcgaggtc agaggccgag cacctcctcg gccagggcgg 1680
tgccccgaac acgggcctcg atcttggcga aggccaggtc gcgtgtggtg gaggtgtcgt 1740
cggcgaacgg ggagaagccg cagtcgtcgc aggttcccag ttgctcgacg gggatgtagc 1800
gggcggcgag caggatgcgg tcgcgtacct gtcgggggt ctgcaccact gggtcgatcg 1860
ggtcgggtcac cccgaggaag acgcgggcgg cagggggcag gtggtcacgg acgatgctca 1920
ggaccgcctc ggggtccgct tcgcggcca gttcgagata gaagttgcc gccttgagct 1980
ggaagagctt gggcagcagt tcggcgtagt cgatgtcgag gctgtgcgtg gagtctggt 2040
cgccgcgggg gcagggtgtg acgccgatgc gggcggttct ctgggcgtg aagcgcacca 2100
ggacttcggt gttgaggggc atgaagtcgt cgaggacgcc gccgctgggg tcgagcttga 2160
gggacagccg cccctcgggt aagtcgagct ggaccacgtg tgcccccgcg tccaggcagc 2220
ctcgatgtc ggcttcggcc tcgtcggcga ggtcgcgcag gaactgctcg cgggggtagc 2280
cctcgatggg agtggcgggg tagaggaggc tgaggggcga ggggtgcgat accgcctgct 2340
tcagggggcg gtccgtgagc tgccgtgcgg cgcgcagata gggttcggcc cgcacctggt 2400

agcggaaggg	cccttggggtg	atgctgggga	gctgccgggt	gtgcccgtct	gcgaagggga	2460
tgacagcgcc	gtcgggcgag	aggggtgtcg	ggccgggtcac	ggggtagggtg	gcgaagctcg	2520
gcttgactg	ttcacctgcc	acgaggacgg	ggctgccgac	tcgttccagt	cgtgtcaggg	2580
tgctccgcac	ggcctgttcc	tgctgtttgg	ccagggtccgt	ggcgtccagg	gttccctggg	2640
catgcgcggc	aagggcgtgc	aggagtgtcg	cggagcgcgg	aaggctgccg	atcggctcag	2700
tggcgatggt	catggccgaa	gagtagggaa	gaggctgggt	ttcgaaccac	cgcaaagctt	2760
tgattgccgc	tttttcaggg	gaagttgatg	cgaagtcgcc	gagcggcgga	acgtgctgat	2820
gtatgggggg	cgggaggagc	ctgcgggggt	ctaggagccg	gtcgcggcca	cggtgaggga	2880
ggtgccagc	tgggagcggg	gggtcttttc	gccgacgcgg	ttgggctcga	tggtgcgggg	2940
gtcgaaggcc	tctccggggg	caccttgccc	gtagacgcct	tcggggctcg	agtcccgggc	3000
atgggggagc	aggaagaaga	cccggcgccg	gtacagaccg	ctgtccgggt	ccgcttcggc	3060
gtcggccccc	agttcgatgt	agccgatcat	gcggccgctg	cgggcgtagc	gcggcttgtt	3120
cttgcccggg	gggggtcttgt	ccagggcctg	gcggacgtag	tcgagtcctt	cgggactctt	3180
gagccacacg	accttcgcct	cgtgaacgag	atcgctgtcg	gtcagtagcg	agctcatggc	3240
ggcgacctct	ccttcgtcgg	cgtgcaccgg	gtggggaagc	ggtgcctgcg	tgatgtgtgt	3300
tcgtctgcgg	cgggtgggccc	cagtgtgtcg	gaccgcccgt	ggtgccgggt	ctcggccaaa	3360
gcacgggcag	gtacgtcctg	gggcactcac	atcgtagatg	gggtccgctt	ccgcagggca	3420
gtgcctccgg	tcggaggacg	ttcattcgtc	ggctgccaga	gcgaggttgg	ggtagaactt	3480
ccggccgttg	gatttgatca	tgtcggcagg	tgaggcgagg	cccacttcc	ggcggacccg	3540
ggtggcgaag	gcacgggcgg	tcccggggcg	gatgccttca	ctgtgtgcgc	accaggtgct	3600
gtaggacgtg	tagagaaggc	cctgttcgac	gcgtagctcg	ctgttctcgg	ggtcgtggag	3660
gcagcactcg	gcgaggaagc	ggccgatgtg	gtcctcgggt	ttcgcgtatg	cgctgggtgg	3720
gatgcggacc	cggtcggggc	cggcgagtgt	gtcgcgggtg	gcgaggtagc	ggcgggcccc	3780
ttcggtgagc	cagtgcagga	tcccggggcc	ctcgtcctgg	acgagttcga	cagccaggtt	3840
gtcgatcttg	cgttcgtcgg	ggacgatccg	ttcgaagggc	aggagggcga	tgccggcgcca	3900
gaaggcgaag	ccgcccgttg	agacctcggg	gcgggtggtt	cccagcagcc	acagcttgtg	3960
ctgggtgttg	aaggagaaat	agtcctcggc	catgcggcgg	gccttgatct	tgtcaccgcc	4020
ggtcagcagg	cggacgcgcg	cctcgtcgaa	cgggtcgttg	ggcttgagct	cgctgcacac	4080
gatgaggcgg	cggccgtgga	gttcggtgag	ctcgggtgag	tgttcggagt	atgcgccacg	4140
gtccatgagg	aaacccggcg	gggctgcgtc	ggcgtagtcg	ccgagaatct	ggatcatcac	4200
gtcgaggaga	acggatttgc	cgttcttttc	ctggccgtgg	agaaagggca	gcacctgcgc	4260
cccgaactca	ccggtgatgg	agtagccgag	aaggaggtgg	aggaagtcga	tcattctccc	4320
cccttcggcg	tactgccga	aggtgtcttc	gaggaaacgg	tgccagcggg	gggtggggat	4380
gtcctggggg	gaggcgctgg	tggcgcgga	gtggaagtcc	cgggtggggg	cgggcttgcg	4440
catacgcccg	ttgcggaggt	cgaccactcc	gtcaggggtg	cacagggcgt	aggggtctcc	4500
gtcaggggtg	tcgggatcga	gggagaggtc	gggagaggcc	tttgctggg	tgaggagcgc	4560
cttcataacc	gtcgtcgaca	gggtgcggcg	tttgtggtgg	tgagttccc	ggtcggtgaa	4620
cagcccgcgg	ggatcgctgc	cgggcatctc	ctccgccatc	tctccggcag	cccacagggc	4680
agctttctcg	cctccggccc	gcttccaccg	gtagccgtcc	caggagtacc	agcccagggc	4740
ctccacgtgc	cggaaactgt	cacggtagag	acggacgaag	agcttggtcg	tgccgcggtc	4800
ggtcaggctg	gcgggaatct	cgcccgcttc	ccaggcggtc	gcggcgacgg	gggcctcggg	4860
agcggccttg	acagggagga	gcggcgctgg	ggccgggggt	gtttcgaggg	ccagcatctg	4920
ctgagcggcg	gcagttgcgt	caaagcgagg	gcctcggcg	ctgctgtcga	tggacgtcct	4980
tcgagatgga	gcggtcgggc	ggtccccgct	gcgggaacgg	catgaatgat	cttcccgggt	5040
cggacagagt	gccaggggca	gcgcatgtgc	ggggggacaa	cggcccgttt	cggacgaggg	5100
ccggccgacg	gggggaagca	ggggccggca	accgggtggc	ggggcggtcg	gagcgagggc	5160
acgagcggcc	cggtagcggg	ggaagggtct	gtctctccgt	ggggcggcac	gttggtgtcc	5220
tcgtccgtca	gcttgctgtc	ggcttcagcc	tcctgacccc	caataaggcg	aaagctgctg	5280
gtcaagcatc	tttcgtgaca	ctcggcgagg	gactgaaggg	actgtctttc	ggaatgagtg	5340
taggggggtt	tcgggtgggg	accgcgcctc	gactccccgg	cggacgggat	ctgttcggtc	5400
ggtcccttgg	gtccctcccc	ggatcgcggc	agggacccaa	ggggcggtg	cggcggggcg	5460
tcggtgaggg	gccccggtgg	agggactgag	ggtctgtatg	gagcgataag	agggctctgaa	5520
ggggcggaga	gagtttcggt	ccctgcgttg	agtccctggt	catcacgcga	ggtcagaggg	5580
gttttgaggg	gtgaaaaagg	gactgaaggg	actcaacttc	cccattatga	gctgagtaga	5640
agaaagcagt	atgacgatat	cggcgccctac	atacgcgcg	gtacatagtg	agcttataat	5700
gcggaagttg	agtcctttca	gtcccttttc	gtggggtcgt	atccctctgt	actgcgttga	5760

ccgtcgccgc	tccgcgcagg	gaccgaagag	ggaccaagtc	cctgcgcggg	gcgggcgacg	5820
gtaatcgtgc	agtgcacct	cccccgtttc	ccacagcgag	tcgtcgctcc	cctgtgaggc	5880
cggagagggg	cctagaaccc	ctcagggggc	gttctgtggc	cctctggggc	tcctcctggc	5940
cattttacccc	atggggggcg	ttggggggcg	caggaggggt	tgtgaggggt	ctgccgggaa	6000
gtggcgagatt	gcgcattggca	ggagatgccc	cgacagcggc	cggaatcga	cgatgtcccc	6060
cgacccctat	ccagcgctcc	ctgatcctca	ggaggcagac	cttgagggt	ccagaagcga	6120
agaacggccg	gtccccggag	cagccgcagg	aagagcggat	cgctcctggac	gtatggctgg	6180
cgaactaccc	gttccccacc	tatgacgggc	gtgacttctt	cgctccgctg	cgcgagcggg	6240
cggcggaggt	cgagcgcgc	cacccccgat	accgggtcga	catcaacggc	cacgacttct	6300
ggaccatccc	cgagaagggt	gcgcgcgcc	ccgcggagg	caggcctccg	cacatagcgg	6360
gctactacgc	caccgacagc	cagttggcgc	gggacgcgcg	caggcccgac	gggaagccgg	6420
tcttcacctc	ggtggaggcc	gcgttggccg	gccggacgga	gatactggga	caccgggtgg	6480
tgggtggagga	cctcgacccc	gtggtgcgcg	actcctactc	gttcgggggc	gagttggtgt	6540
cgctgcgcgt	cacgggtcac	accatgctct	gtacgcctaa	ctcctccctc	ctcgcgcgcg	6600
ccggtgttcc	ggagttgccc	cgtacctggg	atgaggctga	agcagcctgc	caggcgggtg	6660
ccagcgtcga	cgggggggccc	ggtcacggaa	tcacctgggc	caacgacggc	tgggttttcc	6720
agcaggccgt	cgcccttcag	aacgggggtg	tgaccgatca	ggacaacggc	cgctccggct	6780
ccgccacgac	ggtggacgtc	acatcggaag	agatgctgga	ctgggtccgc	tgggtggacgc	6840
acctccatga	gcgcggccat	tacctctaca	cgggcggggc	ctcggactgg	ggcggggcgt	6900
tcgaggcttt	cgtccagcag	aaggctcgat	tcaccttcga	ctcgtccaag	gccgcccggg	6960
aactcatcca	ggccgggtgca	caggccgggt	tcgaggctgc	ggtgttcccg	ttgcccaggga	7020
acgcgaaggc	cccggttagcg	ggccagcccg	tctcggggaga	ctccctgtgg	ctggccgcgg	7080
gactcgacga	gaccacgcag	gacgggctgc	tcgctctcac	ccagtacctg	atcagcccg	7140
ccaacgccgc	ggactggcac	cgcaccaacg	gtttcgtacc	ggtgaccggc	gcggccgggg	7200
aactgctgga	agcgacaggc	tgggttcgac	gccggccgca	gcaacgggtg	gccggggagc	7260
agttgaaggc	gtccgaccgg	tcaccggcgc	cgctcggcgc	gctgctcggc	gacttcgcgg	7320
ccgtcaacga	ggtcatcacc	gcagcgatgg	acgatgtcct	gcgcagtggg	gcggaccccg	7380
cgaaggcctt	cgcggaagcc	ggcgtggcgc	ccagcaact	gctcgatgcc	tacaacgccc	7440
ggaaaccgctc	cggatccggg	acccctcccg	ccgtctgaga	tccgggtacc	gggcacaggg	7500
gcgcgcgcgc	ccgctttccc	ggcggggcac	tggccggggg	acatgctctc	ccgcccccg	7560
caggacgtag	ggtcaacccg	cctgcgcctt	cagggtggcg	cgcagatact	caccgggtcag	7620
ggaggaatcc	gcggcgagca	ggtccttcgg	tgtgccgggt	aagacgatct	cgccgccttc	7680
ccgtccccc	tcggggaccca	ggtcgatgat	ccagtcgggc	tgctgcacca	catcgagggt	7740
gtgctcgatg	accacgacgg	tgttcccggc	ctcgacgagc	ccgtccagga	gcttcagcag	7800
ggtgtcaacg	tcgacatgt	gcagcccggt	ggtgggctcg	tccaggacat	agaccgtgcc	7860
cgtgcgggtg	agctggctcg	caagtttgat	ccgctgcagt	tcaccgccgg	agaggctgga	7920
aagcggctgg	cccaggctga	ggtacccaag	accgacgtcg	acgagagcgc	gcagtttcgg	7980
cagcagggcc	ttctcggtga	agaactcgac	ggcctcgctc	gcgggcagct	ccaggacgtc	8040
cgcgatcgac	ttcccgcgaa	gctgggtgct	caggacctcg	ggcttgaagc	ggcgccccctc	8100
acagacaccg	cagtgcgtgg	tcaccggatc	catgaaggcc	agctcgggtg	tgatgacccc	8160
gcggccctgg	cactcctcgc	acgacccctt	ggagttgaag	ctgaacagcg	aggcgttcgc	8220
gccggctctc	ttcgcgaaca	gcttgcgcag	cgggtccatc	aggccgagg	aggagaccgg	8280
tgtggagcgc	gacgagcgcg	cgatcgcgga	ctggctgaca	aagaccgcgt	cggggtgcgc	8340
ctccatgaat	gccccggaga	tcaggctgct	cttgccggaa	cccgccacc	cggtcaccgc	8400
ggtcagcaca	ccggtgggca	cggccacgga	gacctgcttc	aggttgtgga	gatccgcgtt	8460
ctccacggtc	agctcccccg	tgggcggggc	gacctcctcc	ttcacgcggg	ccccccgcgc	8520
cagagcctcc	ccggtccggg	tcttcgcctt	ccgcagcttc	gcgaaggacc	cctcgaacac	8580
gatctcgccc	ccgtgcactc	ccgccccggg	accgacatcg	acgatgtggg	cggcgatctc	8640
gatcacatcg	gggtcgtgct	cgacgaccag	cacgggtgtt	cccttgctgc	gcagcgcgcg	8700
cagcaggtcg	ttgagccgcc	ccacgtcgcg	cgggtgcagg	ccgatgctgg	gctcgtcgaa	8760
gatgtacgtg	agccccggca	gaccactgcc	gaggtggcgc	accatcttca	gccgctgcc	8820
ctcgcccccc	gagaggctcg	ccgtgggcct	gtccagggtc	aggtagccga	gcccgatgga	8880
cacgatccgc	tcaggggccg	tgcgcgcggc	tttcgcgaga	ggggcagcgg	ccggctccgt	8940
gacgccggcg	agcacctccg	tgaggctcgc	gacctccatg	ctcgagtagt	cggcgatgtt	9000
cttgccgctg	atccggacgt	cgagcgcggc	ggcgttgagc	cgcgcgcccc	ggcaggaggg	9060
acagactccg	tcgggtgacga	aacgttcgat	gacctcgcgc	ttgcggctgc	tcagcgcgct	9120

gaggtcgcgc	ttgaggttga	gccgctcgaa	ccggtcggcc	aacccctcgt	agttcgtctg	9180
gaactcgggtg	ctcttggtct	tcagcgtcac	cttcccgcgc	gtgccgcgca	gcagcgtgtc	9240
cagctcctcg	gcgctgtact	cggcgatcgg	cttggccgga	tccagacggc	cggacttcgc	9300
ccagatctgc	cagtccgggc	taccacctt	gtactcgggg	aaaaggaccg	ccccgtcgtc	9360
cagggacttc	gagcgggtcca	gcattcttgc	caggtcggag	gcgatgctct	ggccgagacc	9420
gtcgcagtc	gggcacatgc	cctgggggtc	gttgaacgag	aacgcggaga	cgccgagcga	9480
ggacggcccg	tcgtccttcg	tcgtgccgaa	ccgtgcgaac	agggcccggga	tcacgggtcg	9540
tacgtccgtc	atgggtcccca	ccgtggaccg	ggcgttgccc	cccacgggct	tctggtcgac	9600
gatcacccggg	gtggtgaggt	tctcgatcgc	ctcgccctga	ggacgttcgt	acttcggaag	9660
ctgggttgcg	atgtaccagc	tgaaggtgga	gttcagctgt	cgctgggcct	ccacggccac	9720
cgtgtcgaag	acgatcgacg	acttgcccga	acccgagacc	cccgtgaaga	ccgtgatctg	9780
gttgccgggga	atcgtcaggg	agacatcttt	gaggttgtgg	atccgcgcgc	ccgcgatgcg	9840
gatgccgtct	ccccggccgg	atgtttttcc	cgcgcggcg	gtggggtcgg	tgacgtcac	9900
agagttttcc	tcctggcttc	cgtacatgat	ttaccgtgtc	agccgggcaa	accggcggaa	9960
cggtaaccac	ctagcttgta	ctcaggaggt	gtccgggggtc	ttctcctccc	gtgctgactt	10020
gggggcccggc	ccgccggaca	gggcccgtc	cgtgttccac	cccgccagcc	gatccccccg	10080
ctccgtctcg	tcctcctcga	gaacgatccg	gctgctcgcc	cagcgcagga	tcggcggcgc	10140
cgtcacccgag	gtgatgaggg	cgaccagcac	gatgatcgtg	aaggtcacgg	tgtccagtac	10200
gccgatacgc	aggccgacca	gggcgatcac	caoctcgatc	attccacgcg	agttcatccc	10260
cgctccgagc	gccagcccct	cgtagcgggt	catcccgcga	ctacggggcg	cgacgtacgc	10320
accggcgaac	ttgccgaaag	tggccacca	cagcaccctg	agggccgtga	gcagcaccga	10380
cggtcccgcg	agtgcgggtca	ggtccatgcg	aagccccaca	ctgcccagga	acaccgggtgc	10440
gaacacggcc	atgaccagcg	tgcgcagcgg	ggcgagccgt	accggggcga	tgtgcctcag	10500
cagggctcgca	ccggccacga	acgccccgaa	caacgcctcc	atcccggccg	ccgcggctcag	10560
cgccccgtac	aggacgacca	cggccacgcg	gacggtgacg	gccgatacgg	ggaccccggt	10620
gtcacccgta	cgggacagcc	gcctgccgat	cgggcgcgcc	accgcacacg	ccgcggcgac	10680
gaagacggtc	gtccaggcca	tcgtgggtcag	gaccacgggc	cccccgccg	ccccactcgc	10740
cagcgcctgc	accagagcga	gcagcagcca	gcccaccgcg	tcgtcgaaca	ccgtgcgcgc	10800
gatgagcagc	tggccgacgt	tgcgggtgcg	cagattcagg	tcggcgagcg	tcttggcgat	10860
caccgggagg	gccgtgacac	acatcgcgac	cccaggaac	agcgcgaaga	cgccccgctc	10920
tccggagtcc	gcgagcagcg	aggcgggcac	caggtagccg	gtggcgatgc	ccagccccag	10980
aggaatcaga	agaccgcgca	ggctgaccgc	ggcggccaga	cccccgcgct	tgcgcaggat	11040
ccgggggtcg	aactgggcac	ctgcgatggc	caccagcaga	aggacgccga	actggcagaa	11100
cgcgtcgagc	aggtgcgcct	gcgagatgtc	ctcgggaaac	agcctgccgg	aaagtcccgg	11160
cgagatctgc	cccagcaggg	tcggcccag	cagtaccccc	gcggtcagct	ccccaccag	11220
cggcggcgaga	ccgatccggg	tcccagccg	tcccagaccg	taggcacagg	cgagcaggag	11280
gccgacctgg	agcagggaaga	ccgtcagcgg	ctccccgcgc	agcggcgacg	tggctgcgag	11340
cacagccacg	tcaggaccgc	gcaccgggaa	cccagcccag	cccgtccgtc	gacgcggcca	11400
gacccccctg	cctcaccgggt	cgctcggccc	ccgctcctc	ccccagaaga	gcccgtgcct	11460
gcagtgcggc	gctctgctcc	atgaggcggc	ccaccacctt	tcccggcacg	gcgcctgcg	11520
gcccgtcggc	gtcgcgccga	gcggtgtgcg	tcattgcggc	catctcgtcg	gacgcctcgg	11580
agaaccgctg	cctggcccgg	gccgtgtcgg	cgaactcgtc	ggaggagacc	ccgccgatca	11640
gttcgacgaa	ggactgcagg	tcggagtcgg	cgggtgttgg	gatcttcggg	gcctgccaga	11700
aataggagtc	ctccgaatgg	tgcattgtcg	agaagccgac	caggaaactcg	tagaagcggc	11760
cgtactccag	ccggtagcgg	gcctcgaact	cctcgaacgc	gctgggtctcg	tcgaccgacc	11820
cgtccaggca	ggagttgagc	gagcgcgctg	ccagcagtc	gctgtagggtg	gcgaggtgca	11880
ccccggaggga	gaacaccggg	tcgacgaagc	acgcggcatc	cccagaccagg	gccatgcccg	11940
gcgcccagaa	cttcgtgttg	ctgtacgacc	agtccttgcg	gaccgggagc	tcgccgtagg	12000
ggccctcggg	caccggggtg	gcctcggaga	gcttctccgc	gatcagcggg	caggccgcga	12060
tgaacgactc	catgccttc	tcggggtcgc	cctgcaccag	gctcgcggag	tcccggttca	12120
ccactgcgcc	gacactcgtc	agctcgggag	acaggggtat	gtaccagaac	caccctgtgt	12180
cgaaggtgca	ggtgaagatg	ttcccggagt	tcggcttcgg	aagccgcttg	ccgccgttga	12240
agtagccgaa	cagggccagg	ttgcgggaaga	agggcgagta	ctcgcgcttg	gcgcccgaact	12300
tcttgtagag	cccaccgggtg	ttgccggagg	cgteccagac	gaaacgggag	cccacctcgt	12360
gctcgcgcgc	ctcggagtc	cggtagcgca	cgccccgcac	ccggccgtcc	tcggccttga	12420

gcacgtcgag	gacatcgctg	ttctcccgca	cctcgacacc	gtgcctgcga	gcgttgtcga	12480
gcaggatctg	gtcgaacttc	atgcgctcga	cctgggtacgc	gtaccccgtc	gcccccgga	12540
tccggcgcgga	gacggcgaag	tcgaacgtcc	acggttcggg	gttggcacc	cacttgaacg	12600
tcccgcgctg	cttgatcgctg	aaggctgcct	tcttcagctc	gtcggagaca	ccgaggaggt	12660
gtgcgatgcc	gtggacgggtg	gaggggagga	gcgactcacc	gatctggtag	cgcggaagg	12720
tctccttctc	cagctggagt	acgcgatggc	cccgttgcg	gaccagcgctg	gagacggctg	12780
agcccgcccg	acctccgccc	accacgatga	cgctgactg	cgctgacacg	tccacggact	12840
ctccttctcg	cacatcgggc	gtctcatatt	cccaggaatc	ctctggcccc	cccagggtgct	12900
gccgcatctt	cggtattgcg	aagtcgtggg	cattctgcga	gaagcatgaa	ccgcgtggcc	12960
cgggtctacag	tggcggtgaa	tttcagtgat	tgcgctgaag	ggcggcacac	gatgaaggca	13020
cttgactgtg	cgggtggttc	ggggaccgc	ctgcgccga	tcagttacgc	catgccgaag	13080
cagctcgctt	cgatcgccgg	gaagccagtc	cttgaatatg	ttctggataa	tatccggaac	13140
ctcgatatca	aagaggctgc	cattgtcgtc	ggtgactggg	ctcaggaaat	tattgaggca	13200
atgggtgacg	gcagccgttt	cggctcgcg	ctcacctaca	tacgccagga	gcaacctctg	13260
ggcatcgcg	acatcatgct	actggcccga	gacttctctg	acgaggacga	cttcgtctc	13320
tacctaggcg	acatcatgct	ggacggagac	ctgtccgcgc	aggcggggca	cttcctccac	13380
acccgccccg	ccgcgcggat	cgctgtgcgc	caggtgcccg	acccccgggc	cttcgggggtg	13440
atcgagctgg	acggcgaagg	gcgtgtgctg	cgctgtgctg	agaaaccccg	tgaaccgcgc	13500
agcgacctcg	cggcggtcgg	cgtgtacttc	ttcaccgcgg	acgtgcaccg	cgccgtcgac	13560
gcgattagcc	cgagccgacg	gggcgagctg	gaaatcaccg	acgccatcca	gtggctgctg	13620
gagcagggcc	tgccggctga	ggccggccgc	tacacggact	actggaagga	caccggccgg	13680
gtcgaggacg	tcgtggagtg	caaccggcgg	atgctcggcc	gtctggcgct	ccagggtgctg	13740
ggcgagggtg	acccggagag	cgaactggtg	ggtgcgggtg	tcgtcgagga	gggcgccccg	13800
gtgacgcgtt	cgcgggctgt	gggaccagcg	gtgatcggcg	cgggcacggg	cgctcgaggac	13860
agccagatcg	gaccgtacgc	ctccatcggc	cggcgctgca	ccgtgcgggc	gtcccggtc	13920
tccgactcca	tcgtccttga	cgacgcctcg	atcctcgcgg	tgagcggact	gcacggctcg	13980
ctgatcggaa	ggggcgcgcg	gatcgcgccc	ggggccccgg	gcgaggcccc	gcaccggctg	14040
gtcgtcggcg	accacgtgca	gatcgagatc	gcggcctgac	gcaccaccg	gagcaccggg	14100
gggaggctcg	gcaggggcgt	caggccgtaa	gaagggctgc	cggggcgggg	cggaccgcgc	14160
ccggcagccc	acagggtccc	ggtccgcgga	tatgggggac	tcgaggttcg	atcagccgaa	14220
ggtcagagcc	acgtggccga	ggtcgagccc	ggagttgccc	gcgccgaggt	tacaggcggc	14280
cgtggcgcac	tcgacgtcgc	cgaccggcgt	gccttcgggc	gtggagcccc	tgtacgactt	14340
gcgcacgacg	aagctgaacg	acgccgctcc	ggacgcgtcc	gtggtgaagg	acgtcgcggg	14400
cgcggggttg	cacgcgtcct	ggccaccgac	cggagcgcac	tgggcgatgt	agtaggtctc	14460
gccgcggcg	gcaccgctga	ccgacaccga	cacgctctgt	ccgtcactca	gacccgaggc	14520
gggactgacg	gagaaggcgg	gcgcggcgaa	ggcgacggac	tgtgcggcg	cggccaggcc	14580
gatggatgcg	acggccacga	cgccgaacct	ggaagcacgg	cgggacatgt	gacgtaacga	14640
catgcgtagg	ctccgattcg	aggagggggg	tgatcactcc	atgaaaggat	cacctcgccg	14700
gacggccgcc	tgcattctcc	tctgtgctct	cgtggatttc	cggcacggca	ctcccgctga	14760
cggccgcccc	cagaatgcgg	cagaccccc	gcacctctc	cggccccacc	gccgtaccgg	14820
tgggcagcga	cagcaccgcg	tcggtgagcg	cctccacctt	cgggagcgga	tcgggcgctg	14880
ggcgcgcgag	gtcggaccgg	tagggctcgc	agctgtggca	gccggggctg	aagtaggcgc	14940
gggccaggac	gttgtgccgt	tggagcaccg	cctggagtcc	gtcgcgggtg	agcccggcgc	15000
ggacggcgct	cacctcgatg	acgacgtact	ggcagttcga	cagctcgctc	ggatcctgctg	15060
ggcgaccgg	gacgccgggc	agtccgtcga	ggtactgctc	gtacagacgg	tagttgcgcc	15120
ggttgatcgc	ggtgaagtga	tcggcgga	ccagggaggt	gaggcccatg	gccgcgctga	15180
tctcgtgcat	ccgcgcgacc	gttccgctcc	cggtgatctc	atgcgcggcg	ttgagccctt	15240
ggtggcgcat	ggcccggagc	gggtcggcca	gggcgtcgtc	gtcgggtgacg	atgcgccgc	15300
cctcgaagct	gttcacgaac	ttcgtcgcct	ggaagctgaa	gatctccgcc	gtgccgaagc	15360
cgcgatcg	cttcgaccgg	taggtgcagc	cgaaggcggtg	ggcggcacg	aagagcaggt	15420
gcagcccgtg	ctcgccggcc	agcttggtca	gctcgtcgat	ccgggcccgg	ctgccgaaga	15480
cgtgcacgtc	caggatggcg	cgggtacgcg	ggccgatgag	ccgctccacg	tgtgccacgt	15540
ccgcgggttc	ggtctcctcg	tccagttcgc	agaagacagg	caccgcaccg	atccagtcca	15600
gtgcgtgggc	ggtggcgacc	caggtgaagg	agggcacgat	cacctcgctc	ccaggaccga	15660
tgcccagggc	cttcgcggcg	acctggatgc	cgggtggtgg	gttcgatacg	gcgacgcagt	15720
gcctgacctg	ggtcagctcg	gccacacggg	cctcgaactc	ccggaccagg	gggcccgtcat	15780

tggtgaacca	caggcgctcc	agcgccccgt	cgatccgttc	catcaaacgg	tcgcggggagc	15840
ccacgttcgg	gcgtcccacg	tcgagcgggt	cgctgaagta	gggcgtgggt	agggagtcca	15900
gacgcaccgg	gccgcccgtc	atgccgtgcg	cacgcgcagc	aagaggccgg	ggctgttggg	15960
ccggccgtcg	gccagccgga	agccgggcac	gaaccgcacc	gagagcccca	ccgattcgaa	16020
ggcgctcggg	tactgctcgc	gggtgaagag	gctggaggtc	aggacctcgg	agaactctct	16080
gaagccggag	gcgtccgcga	cccggaaccg	gacctccaga	cgtgacttgt	cgccctggcg	16140
cacggagtgc	gtcatccgcg	tgatgacacg	gccctcctcc	tggtgcagat	ggccgcccgc	16200
atgcccgctg	aggaagttct	cggggaaata	ccagggttcg	gcgacgagga	ctcccccggg	16260
gttcagggtg	tgggccatgg	ccgacaccgc	ggccttgagc	tcggtgacgg	accccatctc	16320
gccgagcgcg	ttgcccattg	aggtgatcgc	gtcgaagggt	cggcccagggt	cgaacgaacg	16380
catgtcaccg	gcgtgcagcg	ggacgcccgg	aagccggccc	gccgcctgct	ccagcatcgc	16440
gggcgcgtac	tcgaggccct	ccacatggcc	gaagagcggt	gcgagcgtct	ccagatgggc	16500
tccggtgccg	caggcgacgt	ccaggagcga	cacggcgctc	gggcggggcg	cgaggatcag	16560
ctcggtgagc	ccgcgggcct	ccaggtcgaa	gtccttgccg	cggctgcgga	acacgaggtc	16620
gtagaacttc	gcgtgctcgg	ggccgtactc	catcagacga	gtccttcgcg	agactgggcg	16680
gagatgattc	tgggctccgg	gatgggaacg	atgaacttcc	ctccgcctc	caggaagcgg	16740
cgctccttgc	ggacgacctc	gtcgggtgag	ttccaggcga	ggaggaggta	gtagtccggc	16800
tcggtggcag	ggacctcctc	cggaggaagc	accgggatgc	ggttccccgg	cagcagtttg	16860
ccgtgcttga	ggctgggtgg	gtcgcgcgag	acgggtgatgt	cctgatccgt	cagaccgcag	16920
gccatcagca	actgggtccc	cttggacggt	gtcccgtagc	cggccacgcg	gtggccgtcc	16980
gcggccagac	cgcaaacgag	cgtacggatc	gttcgggtca	cgcgcgtcac	ccgctcggcg	17040
aacgcccggg	agggggcatt	cgtcagcagt	ccgcgctcct	cctccaggcc	gagcagcgcc	17100
gcgaccgagg	gctccgggac	ccgtgcggcc	gactcgcgcg	cggcgacgac	cgcgatcgaa	17160
ccgccgtgca	cggcgacccg	ctccacgtcg	atgatccgca	ggccgtgcmc	gccgaagagg	17220
tggcgcagtg	tgtgcaggga	gaagtacgac	aggtgctcgt	ggtagatcgt	gtcgaactgg	17280
ttctcgctga	gcaggttcag	caggtagcgc	acctcgatga	ccaggacgcc	gtcgtcgtcg	17340
agcactgcgt	cgacgcctgc	caggatgcgg	tgcacgtcgt	cgatgtgcmc	gaagcactgg	17400
cggccgatga	cggccttggc	cctgccttgc	tcaagggcga	tgccggccgc	gggtccgggg	17460
ccgaagaagt	ccgggtccgt	ggggatcccc	cgggcgttgg	cgatctcggc	gaggttggcc	17520
gccgggtcga	ccccggccac	ccgcatgccc	gccgcccgga	acatcgcgag	ctgggtgccc	17580
acgttgctgc	ccagctccac	gaccaggtcg	ccggaggcga	ggcttgcccg	gcgggtcgcc	17640
agcccagcga	ttgtgcgccat	gtgctcgcgg	atctgggtcg	agtcggagga	gacgtagacg	17700
tagtgcttga	acagtgtccc	ggggtcgacg	acatggcgaa	gcgtcatcag	ccggcacgac	17760
cggcacacga	tgacgtcgag	cgggaagacg	tcctgcgcct	catcggcgct	ggccggatcg	17820
acgaaccctg	tggccagcgg	cagcgagccg	aaggagatca	cctcgggtcca	gtcgtccgca	17880
ccgcatacac	ggcacgtctc	gtcccgcctg	catttctcca	gcatgaagtc	tcctgacggc	17940
gaatgccgac	gcatcggggc	cgtcgggtcc	gggacgggtca	atctagggtt	ccggccgacg	18000
ggcgctccac	ttcgtatgtg	ccctactggt	tcagcggagc	ggacgggtga	acgcccgtac	18060
gtcctcgatg	aggagctgcg	gctgctccat	ggccgcgaag	tgcccgccgc	ggtcgaactc	18120
ggtccaccgc	gtcagggtcg	gcaggatgcc	ctcggcgaa	gaccggatcg	gccgggtggc	18180
gtcgtccggg	aacaccgcga	cgccgacggg	ggccgtcagc	ggccaggggc	cgccccaggt	18240
gcgggcgaag	tccgccatgc	cgcgagccga	ctcgtagtag	aactgagcgc	tggaaaccggc	18300
cgtcgcgggt	agccagtaga	tcatacacgtg	ggtgagcagc	cgggtcccgg	agatggcctc	18360
ctccacgttc	ttgcgcgcgc	tcactcctcg	gaacttgctg	agaatccagg	cgagctggcc	18420
gaccggggag	tcggtgaggc	cgtaggccag	ggtctgcggg	cgggtggcct	ggatgcgctg	18480
ccagccgatg	ccggtgtcgg	cgaactcccc	gctgtgcgcc	agcttgccca	ggtcgtctct	18540
gtccaggcgc	ccgatggcct	ccggggcgct	ctggggcggg	aaggtcacca	gcatgttcag	18600
gtggacgcgc	gccacgtgct	cggggtcggc	cagccccagc	tccagcgaga	cgacctttcc	18660
ccagtcgcgc	ccctgggcga	cgtaacgctc	gtagccgagg	cggttcatca	gctccgcccc	18720
ggcgcggtgc	atccgcgcga	cgtcccagcc	cggctcggca	gtcggggcgg	agaagccgta	18780
gcccggcatg	gaggggacga	cgacgtggaa	ggcgctccgc	gggtcgcgcg	cgtgcgcgcg	18840
cgggtcgcct	agcggcccga	tgacgtcgag	gaactcggcg	accgagcccg	gccagccgtg	18900
ggtgaggatc	agcgggatcg	cgtccggctc	gggcgaacgc	acgtgaagga	agtgcacgtc	18960
ggcgccgtcg	atcgtgggtg	cgaactgggg	gaacgcgttc	agctcggcct	ccgcggcacg	19020
ccagtcgtag	ccgtggcgcc	agtgggtcgg	gagctccttg	aggtaggaca	gcggcactcc	19080
gcggtcccat	ccggatccgg	gtatctcgga	cggccaccgg	gtcgcgtcga	tccgcccggg	19140

taagggtcgtc	gaatgtcggg	ctgggtcgat	ctcgatacgg	aagggacgca	cagtgaatcc	19200
accctcgtga	ttgtgggagc	ggggcgggcg	gaggcgggcg	ccccgatgtg	atccggggac	19260
cgtgtctcag	gccggttcgg	ccggcgggcg	cgcgcttcc	cgtgcggaga	aggaccgcac	19320
ggaggacagg	aagttgcgga	tcacgcgcat	gccgtgttcg	gtccggaagc	tctccggatg	19380
gaactggacg	gactccaccg	gcagcgaacg	gtggcgcgag	cccatcacgt	acccgctcgtc	19440
cgtggagcgc	ccggtgacct	cgagggacgg	cgggaccgtg	ccctccggca	cgatcagtga	19500
gtggtagcgg	gtcgcgaaga	accccgcggg	cagcccggtg	aacactccgc	gcccgtcgtg	19560
cgtgatccgg	ctcgtcttcc	cgtgcatgag	atgccggggc	gggacggtgg	cggcgccgta	19620
ggcgcgggcg	acggcctgat	gccccagaca	gaccccgagc	agcgggaccc	ggccggcgaa	19680
ggcctggacg	atctcgacgt	gccccgaggt	gtcgggggtg	ccggggcccc	gccccagcag	19740
gaccgcgtcc	ggccgcacat	gccccatctc	gtccggggtc	atgagatgcg	accgcaccat	19800

gacgggctcc	gcgcggggcg	acatcagata	ctggcgcgag	atgtcgacga	agctgtcgaa	19860
cgcgtcgacc	accaggaccc	gcggggcctc	ggtgcctgcg	ccggatccgt	cgggagacca	19920
caagctcaca	gcaactcctc	tccggtgacc	gccagtgag	tggcgctcat	cttggccagc	19980
gtctcgggtc	actccgcccc	cggttcggaa	tccggcgacg	ttccggccga	ggcccgggtg	20040
cggtagacgc	cctcgtggtg	gaaaagggtc	cggatgcaca	gcgcgaggtt	ggtgtacccg	20100
cccacgtcga	ggaggccgag	cgccccggcg	tacaggccgc	ggcggtcgcg	ttcgacggac	20160
tcgatgatct	ccatggcgcg	gatcttcggc	gcgcccgtca	tggtgccggc	ggggaacagg	20220
gcggcgatgg	tgtcgaaggc	atcgggtgtc	accccgcccc	ggccgacgac	cgtggagacc	20280
aggtgcagca	cgtgggagta	gccctccacg	tccagctggt	cgggtacgtc	gagcgtgttc	20340
ggccggggcg	tccgtccgat	gtcgttgccg	cagaggtcca	ccagcatggt	gtgctcggcg	20400
atctccttgg	gacccgacct	cagccggact	cccgcggcga	tgcgcgcgtc	cgcgccggac	20460
cgcggcaccg	tgcgcgcgat	cgcccgcatc	gtgacctcgc	cgctcctgat	gcgtacgaac	20520
agctcggggc	tggcgccgat	cagacggtgc	ccgtcgatgc	ccgccagata	catgtacggg	20580
gaggcgttcc	gcccgcgcag	gcgctggtag	acgtccgcgg	ggtcggccgt	cgagcggatg	20640
gagagctcgt	gaccgatctg	cacctggtag	atgtcgccga	cggcgatgtg	cttcagacac	20700
cgctcgacgt	cgttcgcgaa	cacttcgggg	gcgctgtcgt	cggtgaccgc	ggaggcgggg	20760
aagccgtctg	cggacggatc	gggccaggcc	tgtctcacgt	cggcgaggag	cccggtgacg	20820
gtctccggcg	cgaggccggg	ccagtacggg	gactcgtgga	gcagcagttc	gcatcgggcg	20880
gtggcgagat	cggtgaccac	gctgccccgg	tgcaggacca	tgcgtacgtc	cggcaggcca	20940
ggccggttct	cgatgagggt	gggcagggtc	tcgatgtagc	gggcccgtgc	gtacccgaag	21000
aacccgagga	acccgaaagc	gaagccggac	gcggaccctt	cggcgtcgaa	catgtcccgc	21060
atggcccgcg	gcagcgggcca	caaccgcgcc	gcggtacgca	gccgcagccc	ctggggggccg	21120
tcctccagga	gcgcgcggcg	ccgctccagg	agcaggcccc	gcagggcggg	tacgccctcg	21180
acgcgcacca	cccgttcggt	gaccgagagc	gagagcagcg	cgccgaagcc	gacgaactgg	21240
tgcctgcggt	cgcgggccgg	gccggcccg	gactccagga	ggtagacctc	gtcggggccg	21300
aagtgtcctg	ccagcgcgcg	gtaggcgggc	agggcgcccc	tctccttcac	atcgaggcgt	21360
cgtgtccgca	cccgcaccgg	ggccgagacc	acgcactggt	cggtcatact	gggtcctccc	21420
ggatcacgtg	gtgatggcgt	agcgggtgtg	cacctgacgg	gcggtcagca	ccgcccggtc	21480
ggggccggag	cggttgtcga	cgacgcgcgc	ggccttccag	ctgacgaagg	agccggtgtg	21540
ggtcacgggg	tcgaggtcgg	tgtccacgac	gatgccggcg	tgcgcgcggg	tccgctccct	21600
gagccggggc	gcgacggcct	cgccgatgcc	ctgcggttcc	ccctcgggcg	cgggccagcag	21660
gtccatgcgc	acggtgacgg	cgctcgctgc	gtcgtcctgc	cggtcgatga	cgacctggta	21720
gccgaggcag	ccgccgaccc	cgctcaggat	cgcggcctcc	agctcggcgg	gctggagggt	21780
cacgtcgccc	agggggatgc	ggtccgcgac	ccggccgatg	acctggatcc	gcggtcccgg	21840
cagcggctcc	ccggggcccc	ccgggaggat	gcggaccagg	tccccgggtg	ggtagcggat	21900
cagtggtttg	atgccgtcca	ccagcatggt	gaggacgagt	tcgccctctc	ccgtgtcgcc	21960
gaccacggcg	ccggtgtccg	gttcgacgag	ttcgggtcaag	tagttgggct	gggcgagggtg	22020
gagcgtcccg	gtgtccgctc	cgggtggcgt	gcacagggtc	tcctgggagc	cgtagagcgt	22080
gggcccgcag	acggccttgc	gccagagggt	cgccacgttg	tcggcgaaact	gcgggggtgca	22140
gatctcacc	agcgtgagga	agagcttcac	gggaagccgg	gccaggtcgt	agccgtagt	22200
cagggccgcc	ttggcaaggc	tcaggcacag	cgccggagca	cagacgacga	cctcgacctc	22260
cagctcctcg	atcagccgca	gcgccttacg	gaatcccacc	ctgggggact	cgggccagat	22320
cttgacgtga	caggccccca	gctccgctgc	caccgcggtg	aacacgtccc	cgaacgcgta	22380
cagctccgac	ggccccatca	ggcccacgac	gggcatccgc	cccccgaaac	tcgcttccag	22440

catgcgggcgc	caggactccc	ggacggcgat	gttgctggtc	gcgatgtcct	tctcgccgcg	22500
tgggcacggg	gtggccgccc	cggtgggtccc	ggtgggtctcg	tagtagatgc	gtgcttcgtg	22560
cagcgggccc	gacaggacgt	cgtgcatctc	ccgccgcagg	tcgtccttgg	tggatgaagg	22620
caggtccgcc	aggttcgcgg	gggtgacggc	ctcgacgtcc	acgcctgcca	gatggcgggc	22680
gtagaacggc	gagcggcggg	tgacgtggcg	cagtacggcc	gtcagccgtt	cgccctccca	22740
gcgctcgcg	tcggcgggcg	tgagttcgcc	gcggtagaac	gcgtcgctca	cctgccccta	22800
ggcggaccag	aactcgctgt	ccgcgtcggg	gtccagcggc	ccggtcccgc	cgggaccggg	22860
ccgccggccg	tctctcacgg	ctgtgccttg	agttcggtga	gcgcgaggcc	gaccgcgtcg	22920
ttgacctcgt	tggaggccag	cacgtccgaa	cggccgggtg	gccgacgggt	ttcgctcgag	22980
agttcgatca	tgctcgctcat	cctctcgacc	aggcgcgaga	cggttggtgag	gccctcctcg	23040
tccttgagcg	cgctgccccg	gtgcagcgcc	tgacacgtcg	ccgggaagcc	gctgcccacc	23100
aggatcatcc	ggttgagcag	ggcattgacg	gtcagctgag	cccatacctc	gcggcgctg	23160
tagcggcggg	cgaccgagat	gatccccgcg	accttggtgc	tcagcggccg	gtcgaagcgc	23220
agataaccga	ctccggcacg	ctcgatgaag	gtctgcatga	ggctggccgt	gccgaatccg	23280
tgcacggggc	ccgcgaagat	gatcccgctc	gccgcgacca	tcttcgccac	gacctcgggc	23340
accccgctcg	ccagggtgca	ggccaccggc	ctgtcggttg	agtccccgca	gggcccgcac	23400
cgctccatcc	tgatcgagcg	caggtcgacg	gcctcgaagt	cgacgccgcg	gttctctgct	23460
acgcgtgccg	cgtgccgcag	tacgtcggcg	gtgttgccgt	cacgttccga	accgttgatc	23520
gcgaggatct	tgagttgtgc	gtcacgagg	ggcctccttg	gtgagtcagg	tgcgctcggc	23580
ggtcggctcg	ggggaactgt	ctggccgcgc	ctgggtccgg	agccgcaggg	ccggctcggc	23640
gggggcgggg	ggaagaccgc	cccgcggcgg	gccgccacgc	tcgccgaacc	ggatgagggg	23700
cttctcgacg	agatagaagc	tgatggtcgc	cagcacgacg	ctgatcgaga	tcgtgaagag	23760
gaacagttcc	cagaacccca	tgtcaccccg	gaattccggc	gttggcacgg	gagacttgcc	23820
gaagatgctg	ccgttcctga	gccagagggt	gatcacgac	tcgtgccaga	ggtagacgcc	23880
gagggagatc	tggccgagga	agaggatcgg	cttgctgggt	aagagcgcg	ccgagaaccg	23940
ggactcggcg	ccggggaccg	tcacgcggtg	caggagcagc	agggtgaagg	aggtcaggat	24000
gaagtggctg	acgagctcct	gggccagggg	cgcgttgctg	cccatgcccg	ggatgccgat	24060
gggcttggtg	gcgtagagga	ggtacagcgg	gatgagcggg	accagcaga	tcagcggggc	24120
ccggatcacg	aaacggtaga	agcccggggt	ccctggcgct	gcctcggcgt	acgcggagta	24180
gatggccagt	gccatgcccc	cggcgaagca	gccggcgtag	tagggcgggc	agtaccactg	24240
catcgctcgc	ccgggtggagg	ggagggttgg	gtacgtgacc	cagccgatgg	ccatgacttc	24300
cagcgcggcc	agcggcagca	ggaggcgggc	tgccctctgc	ccgggagtg	tgccgccccg	24360
cgcgagccgg	tggccgatcc	aggcgatcag	cggcaggggc	aggtagaacg	tgaactcggc	24420
ggggaccgtc	cagggtgggt	cgatgccgtg	catcggtgg	ccctcgggca	gatagaagtg	24480
catgagcagc	acgggcccga	ggacgtcgct	gacgctgtcg	atctcgaacc	agttgtagcc	24540
ggggattgcg	aagacgagca	acaggtagta	ggcgggcagg	atgcgcaggg	cccggcgttt	24600
gaggaaccgt	ccgggtggcg	gccgcttcgt	ccactgatg	gtgacgcggg	cgtagggctt	24660
gtacagcatc	attccggaca	gagcgaagaa	gggggaaggc	ataccccccag	accgtccgcg	24720
aggacgcccc	agaacggttt	gcccgggtca	ccgacgaagc	tgcccaactc	ggcctggaag	24780
gcgacgtggt	agacgaccac	accagcgcg	aggacacctc	gcagtccttc	gaacttcggt	24840
attcgcttgc	tttttgcgcc	acctgcgtcg	cgaaggacgt	cccccatgga	acagtcacct	24900
ttcccttggc	acttgctcgt	tgacttcccc	aaatagtcgg	gtctgcggag	tgtgagccgc	24960
atctccaatc	gtgctgttcc	ggtgctcagg	acgacttggt	tcggcctgag	tgggaaggca	25020
gccacccccg	ccgccccgcc	tcggccagac	cgggggcccga	ggagtcccgt	tccgagagga	25080
tcggagtgat	ctccggcggc	caggcgatgc	ccacctccgg	atccagcggg	ttcaagccat	25140
gttcgagccg	ggggctcgtag	gccgccgagc	acaggtagac	gatcaccgcc	tcgtcgctca	25200
gcgtgaggaa	tccgaagccc	agccccgcgg	agacgtacag	cgcccgctcg	ttctcctcgc	25260
cgagctccac	ggtccgccag	ccgccgaagg	tgggcgaccc	cacccggtatg	tcgaccacgg	25320
cgccgaacac	gctgccgcgc	aggcagctga	agtacttggc	ctggccgggt	acgcccccg	25380
cgaagtggat	gccccgcagc	accccggtgg	aggagatcgc	gcagttcgcc	tgccgcagg	25440
cgaaggagtg	gcctacgggtg	cggcggaagg	gctcgccctg	gaaccactcg	cgaaacgagc	25500
cccgttcgtc	acggaagacc	tgcttctcct	ccgtccacgc	tcccagatc	ccgatcggct	25560
tcacgcgtgg	ccccttctct	cgacttctct	cgacgactcg	cgggaggcgg	ccgaggggtc	25620
cgccgggccc	gtgggaacgc	cgcagtctag	atgcggcggc	accggggggc	gggggggtgc	25680
gacgacgtcc	gccccacctc	agcacaccgg	gagatgcagg	tcggtgacgg	gcgacgtgac	25740
gatgcaacgg	tccgaggccc	ggttgccccg	acgacggccc	acagagccat	cggagcaacg	25800

gagggcgacc	gcagatgacc	aagcacgccc	gtgaccgcgc	ggtagtccctc	ggcgcagggga	25860
tggcggggct	gctcgccgcg	cgcgtccctgt	ccgagacgta	caaggaagtg	ctggtgatcg	25920
accgggaccg	gttggggcgg	acggagcagc	gccgcggtgt	cccgcacgga	cgccacgccc	25980
atgcgctgct	ggccaagggga	cagcagatcc	tcaacgaact	cttccccgga	ctcgacaccg	26040
aactcacctc	ggccggaatc	cccgcggggg	acatcgccgg	gaacctgcgg	tggacttca	26100
acggccgcgc	gtccagccc	ttcgacaccg	ggctgatcag	cgtctcggcg	acgaggcccc	26160
agctggagtc	ccacgtgcgc	gcacgggtcg	ccgcgctgcc	acaggtgaag	atcatggacg	26220
ggtgcgtgat	ccggggcctg	accgcctcgg	ccgaccgcag	ccgcgtcacc	ggtgtcgagg	26280
tggtcgacga	gtcgggtacg	gacaccccga	cgcgcctgga	ggccgacctc	gtcgtcgacg	26340
tcacggggcg	cggctcgcgg	actcccgcct	ggctggagga	gttcgggatac	gagcggcccg	26400
cggaggaccg	cttcaagatc	gatctggcgt	acaccacgcg	ccacttcaag	ctcaagggaag	26460
acccctacgg	cacggacctg	tcgatcaacc	cgggtggcatc	gccgagcaac	ccgcgcggcg	26520
cgttcttccc	ccggtcgcgc	gacggcagct	cccagctctc	cctcacggga	atcctcggcg	26580
accacccgcc	caccgacgac	gagggcttcc	tggcgttcgc	caagtgcgtt	gccgcgcggg	26640
agatctaccg	ggccgtccgc	gatgccgaac	ctctcgacga	accggtcacc	ttccgcttcc	26700
cggcgagcgt	ccgcgcgcgt	tacgagaggc	tgcgcggttt	ccccggcggg	ttcctcgtca	26760
tgggcgacgg	cgtgtgcagc	ttcaaccccg	tctacggcca	gggcatgacg	gtcgcgcgcc	26820
tggaggccgt	ggcgtgcggg	gaccacttgc	gcgacgcccc	ggaccccgac	gccctgcgct	26880
tcttccggcg	tatctccacg	gtcatcgacg	ttcctgggga	catcgccgcc	ggagcggatc	26940
tgaacttccc	cggggtggag	ggcccccgca	ccatgaagggt	gaagatggcc	aacgcctaca	27000
tggcccgcct	gcacgcagcg	gcagccgctc	acggcgcggt	gaccggggcg	ttcttccggg	27060
tggccgggct	ggtggacccc	ccgcaggccc	tgatgcgcgc	ctccctcgcc	ctgcgggtca	27120
tgcgcaactc	ctcggcgaa	ccgtcgggtc	cttcggggcg	cgcggtatga	ccgcgcggcc	27180
cgtccggggc	ggctgccggg	gccaggagcc	gacatgcggg	tgatgatcac	ggtgttccc	27240
gcgcggggcg	acttccctgcc	gctggtgccc	tatgcctggg	ccctgcagag	cgcggggccac	27300
gaggtatgtg	tcgtggcgcc	cccgggctat	cccaccgggg	tggccgacct	cgacttccac	27360
gaggccgtca	ccgcggccgg	cctgaagtcg	gtgacctgcg	ggcagccgca	gccgctggcg	27420
gtccacgacc	gcgacgacct	cggctacgcg	gcgatgctgc	cgaccgcggc	ggagtcggag	27480
cgtctacgtg	cggccctcgg	gatcagcgag	aaggagcgcc	ccacctggga	cgtcttctac	27540
cacttcacct	tgctggcgat	ccgcgactac	catccgcgcg	ggccgcggca	ggacgtggac	27600
cagggtgatcg	agttcgcccc	gatctggcag	cccgatctgg	tgctgtggga	cgctgtgttc	27660
ccctcggggc	cgatcgcggc	gcgggtcagc	ggcgccgcgc	acgcgcgggt	gctcgtagcc	27720
cccgactaca	ccggtcgggt	caccgagcgg	ttcgccgcgc	cgggccccgc	ggcgggggcc	27780
gacctcctgg	ccgagacgat	gcggccgctg	gccgagcggg	acggcggtga	ggtcgacgac	27840
gatcttctgc	tcggacagtg	gacggtcaat	ccgttcccgg	cgcgatgaa	cccgcgcacc	27900
cggctcacga	acgttccggg	gcgctacgtg	ccctacaccg	gtgccagcgt	catgcccgcg	27960
tggctgtacg	cgcggccgct	gcggccgcgg	gtggcgctgt	cgtcgggagt	gtccgcgcgg	28020
gcgttcctca	aggggtgactg	ggggcggtacc	gccaaactgc	tgggaagcgg	cgcggagctg	28080
gacatcgagg	tgatcgccac	gctcaacgac	aaccaactgg	cggagagcgg	gccgctgccg	28140
gacaacgtcc	acaccctcga	ctacgtaccg	ctcgaccagt	tgctgcccac	ctgctcggcc	28200
gtcatccacc	acggatcgac	gggcaccttc	gccgcggcga	gcgcggccgg	gctgccccag	28260
gtggtctcgc	acaccgacga	gcccctcctg	ctcttcggcg	aggacacccc	cgacggcatc	28320
gcgtgggact	tcacctgcca	gaagcagctc	accgcgacgc	tcacctcccc	cgtggtcacc	28380
gactacgggg	cgggggtgcg	cgtcgaccac	cagaagcagt	ccgcgggaca	gatccgtgag	28440
caactacgca	gggtgctcac	cgaaccttcc	ttccgcgagg	gcgctcgacg	gatccgggaa	28500
gaccggaatt	ccgccccag	cccggctcga	ctcgtatcgc	tcctggtaga	actgacgaag	28560
cgtcatcgcc	gtgacaagga	ggcggaccga	tgaggatgct	ggtgacgggc	ggagcgggtt	28620
tcacggtcgc	gcagttcgtg	cggggccacac	tgacggcgga	gctgccgggt	tcgaggagcg	28680
cccgggtgac	ggtcctggac	aagctgacgt	actccggcaa	tcgggccaac	ctcacctccg	28740
tcgcggccca	tcgcgggtac	accttcgtcc	agggcgacac	cgtcgaccgg	cgcgtcgtcg	28800
acgaggtggt	cgccggccac	gacgtcatcg	tcacttcgc	ggcggagtcg	cacgtggacc	28860
gctcgatcga	caccgccacc	cggttcgtca	cgaccaacgt	gctcgggacc	cagacgctgc	28920
tgggaagcgg	tctccggcac	ggggtcggcc	ggttcgtgca	cgtgtcgacc	gacgaggtct	28980
acgggtcgat	cgcctccggc	tcattggaccg	aggacacccc	gctcggcccc	aacgtccccc	29040
acgcggcgtc	gaaggcgggt	tcggacctga	tggcgctcgc	ctggcaccgc	acccggggcc	29100
tggacgtcgt	cgtcaccggg	tgcaccaaca	actacggtcc	ctaccagtac	cccgagaagg	29160

tgatccccgt	cttcgtcacc	aacatcctcg	acggtcttgcg	ggtgcccctg	tacggggacg	29220
gcgcccaccg	cggggactgg	ctgcacgtgt	cgcaccactg	cggggccatc	cagatgggtca	29280
tgaatcccg	cggggccggg	gaggtctacc	acatcggcgg	cggcaccgaa	ctctccaacg	29340
aggaactcac	cggcctgttg	ctcacggcgt	gcggcaccca	ctggtcctgc	gtggaccggg	29400
tggccgaccg	gcaggggcac	gaccgcccgt	actcgctcga	catcacgaag	atccggcagg	29460
aactgggcta	cgagcccctg	gtcgcttctg	aggacggcct	ggccgcgcacg	gtgaagtgg	29520
accacgagaa	cgttctgttg	tggcagccgc	tgaagggaagc	ggccggcctc	ctggacgccg	29580
tcggctgacg	gcagccaccg	ctaggaacac	cccaggaaag	gagccacctc	cgtgacagca	29640
gtcaaggagc	cgacgtcccg	cgcaggacgg	cgggagtggga	tcgctctcgt	cgctctctcc	29700
ttgcccacga	tgtctgtgat	gctggacatc	aacgtcctca	tgtctggcctt	gccgcagttg	29760
agcgaggatc	tcggcgcgag	cagcacgcaa	cagctgtgga	tcaccgacat	ctacggattc	29820
gcgatcgccg	gcttctctgg	gaccatgggc	accctcggcg	accggatcgg	ccgccgcagg	29880
ctcctgctcg	ggggcgcggc	cgtcttcgcg	gtcgtgtccg	tcgtcgccgc	gttctccgac	29940
agcgcggcga	tgtctgtcgt	cagccgcgcc	gtgctcggcg	tcgccggggc	cacggtgatg	30000
ccctcgacgc	tcgcgtcat	cagcaacatg	ttcgaggacc	ccaaggagcg	gggcaccgcc	30060
atcgccatgt	gggcgagcgc	catgatggcc	ggagtcgcc	tcggggccgc	cgctcggcgg	30120
ctggtcctcg	cgcggttctg	gtggggatcg	gtgttctca	tcgccgttcc	ggtgatgctg	30180
ctggtgggtg	tcaccggccc	cgtgctgctc	accgagtccc	gcgaccggga	cgccggacgg	30240
ctggacctgc	tgagcgcggg	gctctccctc	gcgaccgtgc	tgccgggtgat	ctacggactg	30300
aaggagctgg	cccggaccgg	gtgggacctg	ctcgccgcgg	gcgcgggtgg	cctcggcggtg	30360
atcttcggcg	cgtgttctgt	ccagcgccag	cggcggttgg	ccgaccccat	gctggacctc	30420
ggcctcttcg	ccgaccgcac	cctgcggggc	ggtctgacgg	tcagtctggt	caacgccgtc	30480
atcatgggcg	ggaccggact	gatggtcgcc	ctgtacctcc	agacgatcgc	cggctcactcc	30540
ccgttgcccg	ccgggctgtg	gctgctgac	ccggcctgca	tgctcgtcgt	gggcgtacag	30600
ctgtcgaacc	tgtctggccca	gcggatgccc	ccttccccgg	tgctgctggg	gggactgctg	30660
atcgcgcccg	tcggacagct	cctgatcacc	caggtggaca	ccgaggacac	cgccctcctc	30720
atcgcgcca	ccaccctgat	ctacttcggc	gcctcaccgg	tggggccgat	caccacgggc	30780
gcgatcatgg	gagccgcgcc	cccggagaag	gcgggtgcgc	cctcgtcgtc	gtccgccacc	30840
ggcggcgagt	tcggagtggc	gctcggcatc	gcgggcctgg	ggagtctggg	caccgtcgtg	30900
tacagcccg	gggtcgaggt	gccggacgcg	gccggggccc	ccgacgccga	cgccgcgcag	30960
gagagcatcg	ccggcgccct	gcacacggcc	ggtcagctgg	caccgggcag	cgccgcagcc	31020
ctgctggact	cgcgcgcgcg	ggccttcacc	agcggcgtgc	agtccgtcgc	cgccgtctgc	31080
gccgtgttct	ccctggcgct	cgcctctc	atcggcaccc	ggctgcggga	catttcgcgc	31140
atggaccacg	ggcacggcga	ggaaccggcc	gagaacgacg	ctcaaccggc	cacatgagcg	31200
cacttccgga	gatgcaacgg	ccgccgtcga	ggtatgagga	tcaccttcg	gggtgcacct	31260
gcacggcaac	ggaggcgtag	tggagtactg	gaacagcacg	gcggagacca	tgccccgcca	31320
ggaactcgaa	cagtgggaagt	ggcgcaggct	ccaggccgcc	atggaccacg	ccagaaggct	31380
ttcgcccttc	tggcgggaaac	gactccccga	gaacatcacc	tccatggcgg	actacgcggc	31440
gcgggtgcct	ctcctgcgca	aggccgacct	cctcgcgcgc	gaagccgcgt	ctccccctta	31500
cggcacctgg	ccctcgtcgg	atccggcgct	cggagtgcgc	catcaccaga	ccagcggcac	31560
cagcggtaac	ccccccatcc	ggacgttcga	caccgaacgc	gactgggcct	ggtgcgtgga	31620
cacgttctgc	acggcgctcc	acagcatggg	cgtgcgcgcc	caccacaagg	gtctggtggc	31680
gttcggctac	gggtgttctg	ccggttctct	gggcatgcac	tacggcctcg	agcgcagggg	31740
cgccacggtc	atcccgcccg	gcggcctcga	ctcccgctcc	cgggtacggc	tgctggtcga	31800
ctaccagatc	gaggtgctcg	gcctcacacc	gagctatgcg	atgcggctga	tcgagacggc	31860
ccgcgagatg	ggcatcgacc	tcgcccgcga	ggctaacgtc	cagatcatcc	tggccggggc	31920
ggagccgcgc	tccgcgttca	ccaccgcac	catcgaggag	gccttcggcg	cccgggtctt	31980
caacgccgcg	ggcaccactg	agttcggggg	ggtgttcatg	ttcgagtgc	ccgcccggcg	32040
cgaggcctgc	cacatcatcg	aaccctcgtg	catcgaggag	gtgctcgacc	cgggtgacgga	32100
acagcccgtc	ggctacggcg	aggaggcggt	ccgagtcacc	accgggctga	accgtgaggg	32160
gatgcagctc	ttccggcact	ggaccgagga	cgtcgtgggtc	aagcgccccc	acaccgagtg	32220
cggctgcggc	cggacgtggg	acttctacga	cggcggcac	cttcggcgcg	tggacgacat	32280
gcgcaagata	cgcgggggtc	cgatcacccc	ggtgatgac	gaggatgtgc	tgcgcggcct	32340
cgacgaggtg	aacgagttcc	actcgtccat	ccggaccgtc	cgcggactcg	atacgatcca	32400
cgtcaaggtc	gaggcgggag	acatctcggg	tgaggcgggc	gagagcctgt	gcggccgcac	32460
caccgaggag	ttcaagcgtg	agataggcat	acggccccag	gtggagctga	cccccgcggg	32520

cagcctcccc	cgatcgaagt	ggaaggcggc	acgacttcat	gacgagcgcg	aactcgcccc	32580
tcaggcctga	gcaggtggag	cagctcctgg	tgagctaccg	gagcctgggc	ctgctggagc	32640
agagctgcgc	ggtcccggcc	gtgctcgccg	cggtcagggc	cgcccgctgcg	gaactccgta	32700
tcgccctgga	cggccagggc	gtggagtctg	agtactaccg	ggggcacgac	gacagcctcg	32760
tggcctgaac	ccacccccgg	tccgccgggt	cagacgaaag	ggagaccggt	gccccacggt	32820
gcagagcgcg	aagcgagccc	ggccgaggag	agcgccggca	cccggccgct	gaccggcgag	32880
gagtatctgg	agagcctgcg	ggacgcgcgg	gaggtgtacc	tcgacggcag	ccgcgtcaag	32940
gacgtcaccg	cgcacccccg	gttccacaac	ccggccccga	tgacggcccc	gctgtacgac	33000
agcctgcacg	acccccgcca	gaaagcggtc	ctgacggcgc	ccaccgatgc	cggtgacggt	33060
ttcaccacac	gcttcttcac	cgcaccgcgc	agcgtcgacg	acctgggtcaa	ggaccaggcc	33120
gccatcgcat	cctgggcgcg	caagagctac	ggctggatgg	ggcgagccc	cgactacaag	33180
gcgtcgttcc	tcggcacgct	gggggccaac	gccgacttct	acgagccctt	cgcggaacac	33240
gccccggcgt	ggtaccggga	gtcgaggag	aaggtgctgt	actggaacca	tgccttcctt	33300
caccgcgcgg	tcgaccgctc	gctgcccgc	gacgaggtgg	gcgacgtctt	catccacgtc	33360
gagcgggaga	ccgacgcggg	cctgggtggtg	agcggggcca	aggctcgtcg	gaccggatcg	33420
gccctcaccc	acgcggcggt	catctcgcac	tggggacttc	ccatcaagga	ccggaagtct	33480
gccctggtgg	ccaccgtgcc	gatggacgcg	gacggcctca	aggatgatctg	ccgtccctcc	33540
tactccgcaa	acgcggcgac	cacgggcagc	ccgttcgaca	acccgctgtc	ctcacggctg	33600
gacgagaacg	acgccatcct	cgtactcgac	caggtgctga	tccctggga	gaacgtgttc	33660
gtctacggca	acctgggcaa	ggtacatctc	ctcgccggac	agtccgggat	gatcgaacgc	33720
gccaccttcc	acgggtgcac	ccggctcgcc	gtgaagctgg	agttcatcgc	cgggctgctg	33780
gccaaggcgc	tggacatcac	cggggcggaag	gacttccgcg	gtgtgcagac	ccggctcgga	33840
gaagtccctg	cctggcgcaa	cctcttcttg	tactgtcg	acgcggcggc	ccgcaacccc	33900
gtccccctgga	agaacggcac	gctcctgccc	aacctcagg	cgggtatggc	ctaccgctgg	33960
ttcatgcaga	tcggctaccc	gcgggtcctg	gagatcgcc	aacaggacgt	ggccagcggc	34020
ctcatgtacg	tcaactcctc	cacggaggac	ttccgcaacc	ccgagaccgg	cccctacttg	34080
gagaagtacc	tccggggcag	cgacggcgca	ggcgccgtcg	agcgtgtcaa	ggtgatgaag	34140
ctgctgtggg	acgcgggtgg	atccgacttc	ggcgccggcg	acgaactcta	cgagcggaac	34200
tactccggga	accacgagaa	caccggatc	gagttgctgc	tgtcgagac	ggcgagcggc	34260
aaactggact	cgtacatgga	cttcgcccag	gcatgcatgg	acgagtacga	cctggacggc	34320
tggaccgctc	ccgacctgga	gtcgtttcac	gcgatgcgtt	ccgcctcccg	cgaccttctc	34380
ggagggctgt	agttccccga	cgggtgtactg	cgcccccgga	tccggggggc	gcagtacacc	34440
gtcggggcgg	ctgggtgtca	gccgcgcagg	aatccgatga	gctcgggggc	gagcttcttg	34500
ggcgccatgg	cgacggcacc	gtggttgagc	ccgttcaggg	tgcgggtggc	cgcgctgggg	34560
aggactccgg	tgagttcctt	cgcggcacgc	tggaaaccgt	cggggctctt	ggaaccgggtc	34620
agcaccagg	tcggggccga	cgcgcgcgac	cacggctcgg	cggggagcgg	cttgccctgc	34680
tgggtgtcgc	ccatcacccg	gatgtcgtag	ggaagcgtgt	tggccagacc	cttgagggtt	34740
gaccagacac	cgggcatcag	gcgcatggcg	ccgaccatga	aggagggcat	gccctgtgcc	34800
tgaccatga	aggccttgac	cgcgctcgctg	cgctcggtcct	ccgccagaag	gctgtcgatc	34860
tgaccgccga	agccggcggg	cgggcccgaag	ccgtccgagg	tgacggagaa	cggcggtcgc	34920
tagaccgcga	gcttgttcac	cttcaggccg	gcggcggcgg	ctcgaggggc	gagcaccgcg	34980
ccggaagagc	tgccgaacag	ggaggccgaa	ccgccgacct	ggtcgatcag	cgccgcgatg	35040
tcctcgatct	cgcgctcgac	cgcgtacgcc	ggaccgtcgg	cgtggcgcc	gcggccccga	35100
cggctcgtagt	tgacgaccgt	gaagtgtcgc	gcgaggagac	cggcgagctt	cttggcgtcg	35160
gagcggtcgg	ccaaggcgga	ggccaccagg	atcaccccg	gccccctgcc	cgacttgtcg	35220
aaggcgatcg	tggtgccgtc	ggccgataacc	gtcgttgatt	ccaccttggc	tgctttctca	35280
cgggttgaag	acatagcttc	cctcagatca	cattgtgggg	cgtgctgccg	acagtggaga	35340
ccggcgtccg	gaggaaaagt	aatcggtcct	gccagaattg	ggggttccgg	agggcacgcc	35400
gaccgctgca	cgacggcgcg	ccccgacctt	ccggacattg	tcgtgccctc	agatgtgttt	35460
cgcattctca	ggagtgtctc	gtgatccgtg	aggtagagaa	gggacgggtg	tccggtcagt	35520
cgttgccgcg	cgggctgttc	tggtaaagcg	ccagacgcca	ctgcccgtcc	tgttcgacgg	35580
ccagccagga	ggccccgacg	gcgccgtcgc	cgctcgccctc	ggtctcccc	ggggcgagga	35640
tgccgccctc	ggtgatgagc	agggcgatgc	cgctcgccgag	caggcgcgcg	tcgatggggc	35700
tgccgatgac	acgggtgccc	ttgtacgggc	ccgcgaaggc	ggccgccatg	tgggtgcgga	35760
tgttctcgcg	gcccttgccg	aagaggccgg	ggaggatcat	cgtcccgtcc	tcggcggaaga	35820
cgtcggcgaa	ccggctcggcg	tcgtggtcgg	cccaggcggc	cacgatgcgc	gccggcagag	35880

cggtaccgc	tgccagggcg	gcgtcgggag	cggaggtggt	cgagtcggtg	ctggtcatat	35940
cgcggttccc	gtccgttggg	tggcggtttc	ggcacggccc	gcagccctgc	ccgagcccga	36000
cgctggcagg	cggccccgtc	atcaggcatc	tcttgcgttg	cgccccacgc	cagtcacttc	36060
acggccagaa	caagtcgcgc	attctggaag	aagctgaggc	ccgcgacccg	gtgcgacgat	36120
ctgcggtgtc	acggagttcg	cacacgttta	cgcacggagg	ctcgatgccc	gctgtcaatg	36180
gatcggtgca	gtcaggccag	tgcacccgac	gctccgtcgt	ggcgacgggtg	gtgggcaact	36240
tctgtggagtc	gttcgactgg	ctcgcctacg	ggctcttcgc	tcctctcttc	gcggctcagt	36300
tcttccccctc	gtccaaccag	ttcacctccc	tgctcggcgc	gttcgcgggtc	ttcggcacgg	36360
gcatgctctt	ccggccgacg	ggcggggtcc	tgctgggccc	cctcgccgac	cggcgcgggc	36420
ggcgccccgc	cctgatgctg	gcgatcggac	tgatgaccgg	cggctcgacc	ctgatcgccg	36480
tcttccccac	ctacgagcac	atcgggatcc	tgcccccgct	gcttctgctg	ctcgccccgc	36540
tgcgccaggg	agtctcctcg	ggcggggaat	ggacagcggc	ggccacctac	ctgatggaga	36600
tgcgcgcgaa	gaaccgcgg	tgcctctaca	gcagcctctt	ctcgtgacg	accatggcgg	36660
gccccctcgt	cgcatcgctg	ctgggcgcgg	gcctcggcgt	gtggctggga	accgcgacga	36720
tggaggcctg	gggctggcgg	gtgccgttcc	tcctcggcgg	cgtcttcggc	gtgatectgc	36780
tgttctctgcg	ccgtcggctc	accgagaccg	aggtcttccg	ccgggagggtg	cggccccggg	36840
cccggcgcgg	ctcactgggc	cagctgatcg	gagccacccg	ccccagggtg	ctgctggccg	36900
tgatgctggg	ggccggactg	ggcgtcacg	gcggaacgtg	gtcgaccgcg	gtccccgga	36960
tgggccaccg	tctgatcggc	tgcagacga	tgttctgggt	ggtggtctgt	gtgaccggct	37020
cggtcactct	gctgcaggta	cccatagggc	tgctcgccga	ccgggtggaa	ccgggcagggt	37080
tcttgatcgt	ctccagcgtc	gtcttcgcgg	ctgtgggctc	gtacgcctac	ctcaccgtcc	37140
aggactcctt	cgcgagcctg	gcgttcacgt	acagcaccgg	agtgatcttc	ctcggctgcg	37200
tcaccatggg	gctgccgaag	atgctctcca	gaatcttccc	tccgcagata	cgcggcctgg	37260
gcatcgggct	gccgcacgcc	tgcaccaccg	cactcctcgg	cggggcgggg	ccactgctgg	37320
ccgcctactc	cgacgagcga	ggcgccctcg	gctggttcat	cgcgcgcgtg	atggccgcgg	37380
tcctgctcgc	ctggccggcc	accctgtggg	agcgacgggt	gttcgcgcgc	cggacggccc	37440
cgggaagcga	gccggttccc	gaatccgcgg	tgcgccgcc	cgtcgggtga	ccgtccgcac	37500
ttctgcatcc	cgtccggcac	cgagcgccgg	cgaccttccc	gactgagagg	ttgacatcat	37560
gacgacgtcc	gacaccaccg	accggtccca	ggacggcgtg	ccgccgtctt	ccttccacca	37620
ggagtctctg	tgcattgttcg	acagcgggaa	cgacggcgcc	gacgtggggc	cgttcggccc	37680
catgtaccac	atcgtcggag	cctggcggct	gaccggcggg	atcgacgagg	agacctgcg	37740
cgaggcgctg	ggtgacgtcg	tctgcccga	cgagggcctg	cgcacatcgc	tggctccgga	37800
aggctggcacg	caccggccgg	agatcctgcc	tgcggggccc	gccgcgctgg	aggctccgtga	37860
tctcggcgac	gtcgacgagt	cggagcgggt	gcggcgcggt	gaggaaactgc	tcaacgagggt	37920
ggagtgcacc	ggtctgagcg	tgcgggagct	gcccctgctg	cgggccgtgc	tcggacgctt	37980
cgaccagaag	gacgcggtgc	tggctctcat	cgcaccacc	accgcgcggg	acgcctgggc	38040
catgcacgtc	atcgcgcggg	acctgctcaa	cctgtacgcc	gccaggcgcg	ggaaccgggt	38100
tccccgcctc	cccgagccgg	cccagcatgc	cgagttcgcc	cgttgggagc	gcgaggcggc	38160
cgaggcaccg	cgggtcgcgg	tctcgaagga	attctggcgc	aagcgctctc	agggcgcgcg	38220
gatcatcggg	ctggagacgg	acatacccg	ctcggcgggg	ctgccaagg	gcaccgcgtg	38280
gcagcgcttc	gccgtacgcg	gggaactggc	cgacgcctg	gtggagtctt	cacgggcgcg	38340
caagtgtctc	ccgttcatga	ccatgttcgc	cgcctaccag	gtgctgctgc	accgcaggac	38400
gggcgagctg	gacatcaccg	tgcgcacctt	ctcggggggg	cgcaacaact	cgcggttcga	38460
ggacaccgtc	ggttcccttca	tcaacttcc	gccgctgcgt	accgacctct	ccggatgcgc	38520
atccttccgc	gaggtcgtgc	tgcgcaccgc	caccacctgc	ggagaggcgt	tcaccacga	38580
gctgcccttc	tcccggctga	tcccggagggt	gccggagctg	atggcgctcg	cggcctccga	38640
caaccaccag	atctccgtct	tccaggccgt	gcacgcgccc	gcgtccgagg	ggcccagaca	38700
ggccggggac	ctgacgtact	cgaagatctg	ggagcggcag	ctgtcgcagg	cggagggtct	38760
cgacatcccc	gacggggtgc	tgtggctgat	ccacatcgac	ccctcgggct	ccatggccgg	38820
cagcctcggg	tacaacacca	accgcttcaa	ggacgagacg	atggcggcct	tcctggccga	38880
ctacctcgac	gtgtctcgaga	acgcggtggc	cgggcgggac	gcccccttca	cctcctgaga	38940
cagttccggc	ggcgccgaac	ccgccgaag	aaaggaaagc	cagtgtccac	cgtttccgac	39000
acagcggccg	gctcctccct	ggaggagaag	gtcaccgcga	tctggacggg	tgttctcggc	39060
acgtccggtg	aggaaggcgc	gacgttcatc	gagctcggag	ggcagtcggt	ctcggccgtg	39120
cgcacgcga	cgcgtatcca	ggaggagctc	gacatctggg	tcgacatcgg	cgtcctcttc	39180
gacgaccggg	atctgcctac	cttcatcggg	gcggctcgtc	ggacggccga	cgcgcggggc	39240

```

ggcgagggct ccggaacgca gtgagactcg ccggggcgccg tctccccgcg gcgccccggtt 39300
tcacatggct gaggcggttc acccggtacc ggggtgaaccg cctcagccat gtgaaaccgg 39360
gcctgggtcag cgcagctgga tgtccgtctc ccggggcgatc gcccgaggga actcgccgcg 39420
ggacagcgcg tcggcgacca gctcgatgtc gtcggccatg taccggtcga cgccagcgt 39480
cggaaccagc cggcgaccg cttcgtacgt ggccttcgcc gccgggtca agcgtcgaa 39540
ccggccggag atgtcgaccg cctggggcggc ggccaggtag tccaccgca ggatcttgtt 39600
gttggttcgac aggaccggc gggcggttgcg ggccgagatc agggccatgc tcaccacgtc 39660
ctggttgcg ccgttgacg ggacgctctg ggtgctggcc gggcgatcg tccggttctc 39720
ggccaccagt gcggtggcg ggtactgggc gccggcgaat ccgctgtgca gcccgggtc 39780
cccggagacg aggaactccg ggaggccgta gctgaggtgc cggttcagga cccggttgat 39840
ctgccgctcg gccaggacgc cgagctgggt gagcgcgatg gtcacgaagt ccatcgcaaa 39900
cgcgatccgc tgaccgtgga agttcgcccc gtggaagatc tccttgccct cgaagaagag 39960
cgggttgcg ttggccgagt tgagctcgat gccagccttg tgccgcgct ggtacaagg 40020
gtcgcgcacc gccccgacga cctgggggat gggccgcagc gaggtagcct tctgcaggta 40080
gatctccgag cgttgacgt ccttgccggc ctcttgtcc ttctggagt ctggcgcgag 40140
gtcggcggtc tcgaccgtca gtccgctgcc ccgcatcagg gcccgcatgt tggcggggt 40200
gtcgatctgg ccctcgtgcg ggcgggctat gtcgtgcccc tccgcgagga aggggctggt 40260
cgatcccgct accgcctcga tgagcagagc cgtcacgatc tcggcctgct gggcctgctc 40320
cagggcccggt ccgacgacca gggagcccag accggtcatc ccggacgtgc cgttgatcag 40380
tgcgagggccc tccttgaagc gcagttcgag cggctcgatg ccccgctcgg ccagcacctg 40440
ggcggtctcc accggccgtc cgtcgcgcag gacgtagccc tctccgatga ggggtgctcg 40500
gacgtgggag aggggagcca ggtcgccgct cgccccgagt gacccgatct cgggtatggc 40560
cgggggtgat ccctcgttca ggtactgcgc gaggcggtcg aggatgatg ggcgcaccgc 40620
ggagtggccc ttggcgaggg tgttcagccg ggcggcgacg atcgcccgcg cctcgtcctc 40680
ggcgaacagc ggaccgactc ccgcgctgtg gtcacggacg agattggtct gcagttcgac 40740
ttccttcgac ttgtcgacct gcatgtagat catctcgccg taccgggtg tcacccgta 40800
gatgggggatg ttctgttcgg cgatcccttc gaagatctcc cggtcttctt gggccttcgc 40860
gatggattcg gccggtacgt cgaccgtcgc gcgttctctc gcgacgcggc gtacggcttc 40920
gacggtcagg gtctcgccgt cgacggaaac cgggacgatc tcgggtctga cttgagtcaa 40980
tgccatcact ccatgggtag cggccgaggc cgggttacga caggtcagg ggtgggttcg 41040
tgaggcgcg ctcagcgggt gagccgggag cggttccact tccccgcggc gttgcgcggc 41100
aggcgtgaag tcaggcgggt gaagacggcg ggcagtgcga gggggccgaa ctggccgcgc 41160
agatgggaac gccaggcccc gatgtccgcg cgacgtcct cccggccctc tccttgtggc 41220
accacgtaca cggcgaggcg ggtcaccagg cctggccgt tgacgtgggg gaggaccgcg 41280
cactccagga ccgaggggtc acggttcagc ggcgcctcga tctcggtgag ttccaagcg 41340
ttcccgaaca gcttgacctg gaagtccttg cggccccgga attccagggc tccgtcgaa 41400
cgtacccgcg ccagatcccc ggtccgggtac caccggtcac cgtccggggc gaggccggcg 41460
aggggcgcg acagcgcgct gtggtccggg ccgcctcga cggcgagata acccggcgtc 41520
acgtacgggg agcggatcac cagttcgccg gtgacgcgg cggggctcgg ccggtcgtcc 41580
gcgtccacga cgagtacctg gcggccgggg agcgggtacc cgatcggggc cgggcccgtg 41640
accggcccgg tgatctcgtg ccaggtcgcg gcgatcgtct cgggtggggc gtagaggttg 41700
atcaggcggg tccggggcag ggccgcgcgc agtcggtcca cgagttcgcc gggcagcgcc 41760
tcgcccata ggagcagggt gccccagggt cggggccgat cggccgggtc ggaggcgggt 41820
atcactccca ggaggtccc ggccaagct ggcacggtct ggagatgagt gatccgctcc 41880
tggacgagcc acggcaccag cttgtcgggg ttcacctga cgcgctccgg caccggacac 41940
agcgtccccg cggccacgag cgtcgcgaag acctcggcca gcgcgggtc gtgctccggg 42000

```

<210> 2

<211> 21185

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

C-1027 gene cluster sequence

<220>
<223> orf; relative position 42611-41052

<220>
<223> orf; relative position 38983-39264

<220>
<223> orf; relative position 43945-46023

<220>
<223> orf; relative position 46167-47171

<220>
<223> orf; relative position 47227-48485

<220>
<223> orf; relative position 48610-49714

<220>
<223> orf; relative position 50350-51390

<220>
<223> orf; relative position 51420-52341

<220>
<223> orf; relative position 52341-54074

<220>
<223> orf; relative position 54230-55379

<220>
<223> orf; relative position 56027-56881

<220>
<223> orf; relative position 56928-57730

<220>
<223> orf; relative position 57834-58304

<220>
<223> orf; relative position 58440-60091

<220>
<223> orf; relative position 60092-60622

<220>
<223> orf; relative position 60940-62020

<220>
<223> orf; relative position 62045-62899

<220>
<223> orf; relative position 62788-63164

<400> 2

```
agcgccgggt cgtgctccgg ggagaccac tgcgccaccc gcgcgcccgg ccccatcgcg 60
aaccgttcgc ccatccagcc cgcgaactgg cccagcgcgg catgcgactg ggcgatcccc 120
ttggggccgc cggtcgaacc cgaggtgaac gccacgtagg ccaggtctgc caggccccgc 180
cccgcgcggg tcgtcgcgtc cgggcccggc gcggttcgag ggccgagcac agaggaggcg 240
tccagcaggg tggcgccccg ttcaccggcg taccagagcg ccagcggatc ctccctgcgga 300
tcgccgtcga ggaccaggca cgcggggcgc agatcgctga gcatcgaccg gtgtcggttcg 360
cccgcgccgt cgggagcgaa ccacgccagg tgggcgcccc cctccaggac tcccagcagc 420
accgcgatcc ggcggggcgc cggctgcac cgcaccgcca ccggcgagcc gtgcccccg 480
ccggcccgcg tgagggccga ggcgacgcgg gccgcgtccg cggtcagttc ggcggtcagt 540
tcggcgtagc ttgtgcgcgt gccgcgaac gagacggcga caccgtcgtg ttccgcgtgg 600
cggcggaacc aggcgtgcac cggccgcgtc atgtccccgc cggacgcccg gcggtcgga 660
gcgcgcaggg cgtggtcccg gtggcggtcg tcgtccagcg gcagagcgcc cagggtgtgtg 720
tccggatccg tggtcgcggc ggtcaggagg acggccagct gatccagcat ccgcggggcc 780
gaagcgggct cgaacagagc ttcgcggtac tccaggtagc cggtgaccga gggcgcggtg 840
tcttcgagca ccagggtcag gtcggcgggc gcagtgccgt tgtgcacgga cagccgcctc 900
acctcggcgc ctggtatccg caggccccgc cgctcctcgt ggacgaacac ggcgtcggcc 960
ccctcgatcc ggcacggccc gggggccggg gccggcgctc tgtgcagcag ctcccgaag 1020
gcgggtggccg gcgtgccgtc gtcctgtccg gcgtagcgct ggaccagggc tcggaatccg 1080
gccagcacca cggccgcggc ggtgaccctc tccgcttcgg cgagccgggc cgtacggaag 1140
ccgaggtccg gactccagcc gaaggcgacg gtgctcccc cgtgcgaggg cagggtcggg 1200
cggttccggg cggcgggcag gacctgtccg gaggcggtcg ccgaagactc ctgcctccc 1260
ggcgccccgg gcgtttgcgg cgcgggcgca gtgggagggc ggccgcgggt ggtgacggcg 1320
aggtacgcgt tcgacaacgc ggccggcagg ggcccgagc gcccgctcca ggctccggag 1380
tgcgaggcca ccaggagaag caggtgcgcg cgtgggcctc tgcgggcat gtggagccgt 1440
gcgggctcgt caccctcggc gaagggacgg gccgcccagc gagcgagag ttctctctc 1500
ccgactcct cgtcggcact cggcccgctc acggcgccc cgtctccggc ggcgccccgc 1560
caggccgtcc cagggcctc caggtcgagt ccgcgcgtc cgtggtaggc cgcgtacggg 1620
tgcaacaccg cagatccgga ggccggcgaa ggcgccgggt ccggctcggg cacagtcacg 1680
tcattcgcca cgacgccat cttggggcgg cggcgcacag gacgcttctc cttgagtgcg 1740
gagctccgcg tacggcgccg aagcgttcgg tcaaaccttg ttcgaccaac tgcgcaatct 1800
ggaagttagc gtcttccagg tggagtggg aacgatggag gccccgcgg gccgcgtcg 1860
aacggccgtg cagtgcggcc ctctccaaca ctccggcca tcgcggaatc cgagacgtgc 1920
ccgaaggagc ccccttgca agcctggttc aagcgacca gtggtgtgcc cggtgacaga 1980
cgtggaagt ggctggtcct ggccgcctgg ctcatcatcg cgatggcgct gggcccgctg 2040
gcggggaagc tcgccgacgt ccaggactcc agcgccaacg ccttctctcc gcgcagctcg 2100
gagtcgcgca agctgaacaa ggaactggag aagttccgcg ccgacgagct gatgccggcc 2160
gtggtggtct acagcgcccga cggctcgctg cccgcggagg ggccgggcaa ggccgagaag 2220
gacatagccg ccttccagga gctggccgcc gaggcgaga aggtcgaagc gcccctggag 2280
tcggaggacg gccaggcgct catggtcgtc gttccgctga tcagcgacgc cgacatcgctc 2340
gccacgacga agaaggtccg cgatgtcgcg gacgccaacg ccccccggg cgtcgccatc 2400
gaggtgggcg ggcccgcggg gtcgacgacc gacgcgcgg gcgctttcga gtccctcgac 2460
tccatgctga tgatggtcac cggccttgtg gtcgccatcc tgctgctgat cacctaccgc 2520
tccccatcc tgtggctgct gcccctgctc tcgctcggt tcgcctcgt gctgaccag 2580
gtcggcacct acatgctgc caagtacgcc gggctgcgg tcgaccgca gagtccggc 2640
gtcctgatgg tctcgtgtt cgggtgctgg ccactacg cctgctgct catcgcccg 2700
taccgtgagg aactgcgcgg cgagcaggac cggcacgtgg ccatgaagac cgcgttgca 2760
cggtcgggcc cggccatcct ggccctggcc ggcaccatcg ccatcggcct cgtctgcctg 2820
gtcctcgcg acgtcaactc ctcccgctcc atgggcctgg tcggcgcgat cggcggtgtc 2880
tgcgccctcc tcgccatggt cacgacctg cccgcgtgc tggcatcct gggccgctgg 2940
gtgttctggc ccttcgttcc ccgctggacg ccggagtcgg ccgcggcccc cgaggcaccg 3000
gcgtcccaca gccgtggga gcgcacggc tccgtcacgg ccgcccggcc gcgcgcgcc 3060
tgggtgctgt ccttggccgc gacggggctt ctgcacctca gttccctcg cctcgacatg 3120
ggactacccc agagcgaact gctccagacg aagcccagat ccgtcgtcg ccaggagcgg 3180
atctccgccc actaccgctc cggctcctcc gaccccgcca ccgtcgtcg acccagcgcg 3240
gacgtggccg aggtccgccc ggccgcccag gggaccgac gagtgggtctc cgtccaggac 3300
```

ggccccacca	ctccccgacgg	agagctgacc	atgctgtccg	tggtgctgaa	ggacgttccc	3360
gacagcagcg	gggccaagga	caccatcgat	gcactgcggg	acaacacgga	tgctctcgtg	3420
gggggtacga	cggcccagag	cctggacacc	cagcgcgcct	cggtcctgta	cctctgggtc	3480
accgtccccg	cggctcctgct	ggtggtcctg	ctcgtcctga	tctggctgct	gcgctcggtc	3540
accggaccgc	tgatcatgct	cggcacctg	gtcgtgtcgt	tcttcgcggc	cctggggggc	3600
tccaacctgc	tcttcgagta	cgtgatgggg	cacgcggcg	tcgactggtc	ggtgccgctt	3660
ctcgggttcg	tgtacctggt	cgcctcggga	atcgactaca	acatcttcct	catgcaccgg	3720
gtgaaggagg	aggtcgctct	gcacggccat	gccaaggggc	tgctcaccgg	cctgaccacc	3780
accggggggc	tcataccag	tgccggcgtg	gtcctggccg	cgacgttcgc	cgtcacgcgc	3840
acactgccgc	tggtcccgat	ggccagatg	ggtgtcgtgg	tcggcctggg	cattctgctg	3900
gacaccttcc	tcgtccggac	gattcttctg	ccggccctgg	cgctcgatct	ggggcccccg	3960
ttctggtggc	cgggcgcgct	gtcgaagacg	tccgggggac	cggccccgt	ccgcgaggac	4020
cgcacgtccc	agcccggtgg	ctgagaccgg	tcccgcagag	acccgtacgg	cgggcggccg	4080
gttcccccg	gccgtacgac	tgagcaaccc	agaagatggg	ccgcccgcga	ccaggcgta	4140
cgatggtggc	ccaccggccg	caggccgatc	tcccggaaag	aagcgcctg	ttgggcatg	4200
aggacggcaa	ggccgcccag	ctgtggtcga	tggcgaacct	gggtacaccg	atggccgtgc	4260
gcgtcgcggc	gacctgcgc	atcgccgacc	acatcacggc	cggagcgcac	accgccggcg	4320
aaatcgccga	agcggccgcc	gtgcacgagg	aatccctcga	ccggctgctg	cgctacctca	4380
ccgtccgggg	cctgctggac	cgtgacgggc	tcggccggta	cacgtgacc	cccctggggc	4440
ggccgctgtg	cgaggaccac	cccgcggcg	tccgggcctg	gttcgacatg	gagggagcgg	4500
ggcggggcga	gctgtcgttc	gtcgacctgc	tgccacagcg	acggaccggg	aaggccgcct	4560
tccccctgcg	ctacggccgc	cccttctggg	aggacctggc	ggaggacccc	cgccgcgcgg	4620
agtccttcaa	ccggctgctc	ggccaggacg	tcgccactcg	cgccccggcc	gtggtggccg	4680
gcttcgactg	ggcgagcacc	ggtcatgtca	tcgacctcgg	aggcggcgac	ggctccctgc	4740
tgaccgcact	gctgaccgcc	tgtccgtcac	tgccgggcac	ggtcctggac	ctgcccgaag	4800
cggtcgagcg	tgccaaggag	tcgttcgcgc	tgccgggact	ggacgaccgg	gcgaacgcgg	4860
tcgcgggcag	cttcttcgac	gccctccccg	ccggcgcggg	cgcctacgtc	ctgtccctgg	4920
tcctgcacga	ctgggacgac	gaggcgctcg	tcgcgatcct	gcggcgctgc	gccgaggcgg	4980
cggggcagac	gggatcgggtg	ttcgtcatcg	agtcgaccgg	ctcggcgggg	gacgccccgc	5040
acacaggtat	ggacctgcgc	atgctgtgca	tctacggagc	caaggagcgc	cgctggagg	5100
agttcgagga	actcgccggc	cgggcggggc	tccgggtcgt	cgcctccac	cccgcgggcc	5160
cttccgcgat	catccagatg	tccgcggtct	gaccgcccgg	agccccggcc	catcgccggc	5220
cggggcacgg	cagacaagga	gagagcgtat	ggccggcctg	gtcatgtcgc	cgggtggaggc	5280
gctcgacgcg	ctgggcacgg	tcgagggggc	tcaggacccc	tatcccttct	acgaggcgat	5340
ccgcgcgcac	gggcaggcgg	tccccacgaa	gcccggccgc	ttcgtggtgg	tcggccacga	5400
cgcgtgcgac	cgggcgctgc	gggaaccggc	cctgcgcgtc	caggacgcca	ggagctacga	5460
cgtcgtcttc	ccctcgtggc	ggtcgcactc	ctcgggtccg	gggttcacca	gtccatgct	5520
ctacagcaac	ccgcccgate	acggccgggt	gcgccagggt	gtgagcttcg	cgttcacccc	5580
gccccagggtg	cgcgggatgc	acgggggtgat	cgaggacatg	accgaccggc	tcctcgaccg	5640
gatggcccgg	ctcggtctcg	gcggctcccc	ggtcgacctc	atagccgagt	tcgccgcccg	5700
gctgcccgtc	gcgggtgatca	gcgagatgat	cggctttccg	gcgaaggacc	aggtgtggtt	5760
ccgcgacatg	gcctcccggg	tcgccgtggc	gacggacggt	ttcaccgacc	ccggcgcgct	5820
cacggggggc	gacgcccga	tggaacgagat	gagcgcctac	ttcgacgacc	tcctggaccg	5880
tcgccggccg	accccggcgc	acgaactggt	cacctgctc	gccgaggccc	acgacggctc	5940
ccccggggcg	ctggaccacg	acgaactgat	gggcaccatg	atggtgctgc	tcacagccgg	6000
gttcgagacc	acgagctttc	tgatcgccca	cggggcgatg	atcgccctcg	aacaacgggc	6060
gcacgcggcc	cggctgcggg	ccgaaccgga	cttcgccgac	ggctacgtcg	aggagatcct	6120
caggttcgag	ccgcgggtcc	acgtcaccag	ccgggtgggt	gccgaggacc	tcgacctgct	6180
gggcctgtcc	gtaccggcgg	gctccaagct	ggtcctgatc	ctggccggcc	cgaatcgcca	6240
tccggccgcg	taccccgagc	ccggccgctt	cgaccccgac	cgctacgcgc	cccggccggg	6300
cgggcccggg	gccaccagac	cgtgagctt	cggcgcgggc	ggccacttct	gcctcggcgc	6360
tccgctggcg	cggctggaag	cccggatcgc	gctgccgcgt	ctgctgcgcc	gcttcccggg	6420
cctggccgtg	tccgagcccc	ccgtctaccg	cgaccgctgg	gtcgtccgcg	gcctcgaaac	6480
ctttcccgtg	accctcgggt	cctgagcccc	cgcggccggg	aacacgtgac	cgtcccggcc	6540
ggcgggtgcg	cgcctctca	gacgtacagg	gtgttggggc	cctgaccaca	cagcaccggg	6600
ccgtacagct	ccaggttggt	gctcgggttc	atgcagggtg	agcgtgatgc	tctgggcatc	6660

gctgcacgcg	ctggatcggg	acgtcgttgt	agatcgagga	cccgccgctc	gcctggggcga	6720
ggatgtccac	cgactccttg	cccagtcggc	acgcccggcc	cagcaggccg	cggcacagca	6780
cccgtcctc	cagcgtccag	gcctcgcccc	aagccccctt	ggagtcgacg	aggtcggcca	6840
gccgatgggc	gtggaaccgt	gcctcgtcgg	ccagcagggt	cgctcgcgcg	agctgcagggt	6900
gggtgatcgg	cgccgagccc	tgctcctcgt	actcgggtga	ggtgatcttg	cggccgggca	6960
gcctcccgcg	gaagacgtcc	tgagcggccg	cggccagtc	ggtcatggtg	ccgaccgacg	7020
aggccgaggc	cacggccagc	atcggcgccc	ggaacatcgg	tgatccggcg	ttgagttcgg	7080
aggcgtactg	ctgctggagc	accgcgccc	gcggaaggac	gcgtcctcgg	ggaacgaaga	7140
cgcccgcgac	gatggtgctg	acgcttcccc	agccccggag	ccccgagggt	tgccagtcgt	7200
cgacgatctg	cagctggctg	gtcggcacca	gggccatcac	gggctgcatg	ccgccgtcgg	7260
gggtcgggtga	gacggcgatc	agaacctgcc	agtgactgtg	ccaggcaccg	ctgatgaagc	7320
cccacttgcc	gttactacg	acaccgccgt	cgaccggggc	cgccatgccc	ccgggactga	7380
gggtgccgga	gacccggaca	tccggccggg	agaacacctc	gtcctgcacg	tggtcgggga	7440
agaggcccg	catccagggt	ggtatccacc	acaccgaggc	cgccaggcg	gccgatccgt	7500
cgccgcgcgc	cagctcggcg	gccacgtcca	ccagggtgcg	ggcgtcggac	tgaagccgc	7560
cgtaacgggc	cggcacgcgc	atgcggaaga	tcccggttc	ggccatcgcc	tcgaccgact	7620
cctcgtgcag	ccgccgggtc	tctcgggtcc	aggccgcgtg	ggactggagc	agcggcctca	7680
gcttcgaggc	ccgttccacc	agttcggtag	ggcgggcggt	agacgtctgg	tccactcgat	7740
cctccaggaa	tcatgagacg	ccctgtccgc	ggtatgcgga	agcaggcgtc	tgccgcgcatc	7800
ggtcaggacg	gcgtcgccct	gctcccgcac	ggttcaccga	gttcgcgga	cgtcgcatct	7860
ccttgattgc	cggtcaccta	ccccgatgcc	gatcgggctg	gtgcgacagc	gcatcccacg	7920
agaagtccac	gaacgggtccg	ggaagccaga	atgtgcttct	cgcccgagg	cacggccggc	7980
gccggcgccc	gtcggcggtc	acgccggacc	acgccggac	cggtcatgga	ggcagcccat	8040
gagtgaaca	gacagtccgt	cccgggtgcc	ggccgcgggt	gcacccgcca	ccgcgaaacc	8100
gtcggccggc	acggtcctcg	gcgccgcgg	ggcttcgccc	gccgcctaca	ccgcggcgac	8160
cgccaggaa	cggcgagacc	cgctgggtccg	catgtgatg	gaacagatgg	tgctcgggtcc	8220
cggcgcggtc	ggtcccagga	cccgcgcgga	cggccggcg	cggcgagacc	gctccggcca	8280
cggcccgggc	ccgcagaccg	gaccggagcg	gcccggcgaa	cccccgcca	cgtgggcgcc	8340
gaacctcgac	gacgggaagg	taggaggacg	atgaggccgc	tcgttcgggc	agtgtcgcg	8400
ggttccctgc	ggcagggtgag	gtacgtggac	gtggtctccc	cgcgcgggg	gcgtccctg	8460
gtggcgcggg	tgtaccggga	gaccgaggag	cagttcggcg	tgctcgcgc	ccccctggcc	8520
ctccactcgc	ccgccgcggc	gtcgtcggcc	gcgacgtggc	tcatgctgcg	ggagacactg	8580
ctggtcgacg	ggcgggtgag	ccgggcgggt	aaggagacgg	tcgccaccga	ggtctccctg	8640
gccaacgact	gtccgtactg	cgtccaggtc	catcaggcgg	tactcgggac	actgcctccg	8700
gacggcgggc	aggccgggct	cctgcgggtg	gtccgggagg	caggccgacg	gcccggcggc	8760
ggtgcgggtg	gcggcgggcg	gccgcttccg	ttcagcgggt	aacaggcacc	ggaactgtgc	8820
ggcgtcgtgg	tcacgttcca	ctacatcaac	cgcatggtct	ccctcttcc	cgacgactcc	8880
cccatgccga	cccgagcgcc	gacaccgttg	cgcgggcccc	tcatgaggac	caccgactg	8940
gccatgcgtc	ccgtcggccc	ggggtgctg	acaccggggc	catcgtcgcg	cctgctgcct	9000
ccggctcccc	tgccgcccgg	actggagtg	gccgagggca	accctttcgt	ggcccaggcg	9060
ctggggcggtg	ccgtcgcgcg	tgtggaccag	ggagcgcact	gggtgcccga	accggtccgg	9120
gagcggctgc	gcacacgtct	ggacacctgg	gacggatcgg	cgccgggccc	cgccggggga	9180
tggtcgcgac	aggccgtgtc	cggcctggcg	ccccaggacg	tgcccgcggc	acggctggcg	9240
ctgctgacgg	ccttcgcccc	ctaccagggt	ctcccggacg	acgtcagga	gttcagacgg	9300
cgtcggccca	ccgaccgcga	actcgtcgag	ctcacgtcct	acgccgcgct	gaccacggcc	9360
gtccgtgtcg	gtcgcacgct	cgctcgtccc	gacgccgcgc	ggccgggatg	aacggccccg	9420
caacggctcg	ggaaggctgt	ctcacggccg	gaggcgtacg	ccggtgagg	gctcggactc	9480
ctccagagg	cggcgccggg	ccctgggggtc	gacggctgct	ccgccggggc	gcacgagccc	9540
gggtgcgccc	cgggtctcgg	tcacgcgcgag	gggcccgtag	aactcgcccc	cgcgcgcgcc	9600
gggatcggtg	gccgcccgc	gaccaggcag	catccccgcc	gcggcgggct	gcaggaacaa	9660
cggggcgagc	ggggagccga	gcctgcgcac	gggcgcggga	aagtcccggc	ccagaccggt	9720
cgcggtcagc	ccgggatgag	cggcgagcga	ggccagttcc	gcgcgggact	ccgccagtct	9780
gtgatggagt	tccagcgcga	acatgaggtt	ggccagcttg	gactggttgt	aggcccgtga	9840
ccggctgtag	cggcgcttcgc	cgtgaaggct	gctgaagtcg	atgcgcccc	gccggtgcag	9900
atagctgctg	atcgtcacga	ccgcgcgcgc	cggcgcgggc	cgcaggctgt	ccaggagcag	9960
gccgggtgagg	gcgaagtgc	ccagggtggt	cgtggcgaa	tggagttcgt	gaccgtccgg	10020

ggtgcggggcc	cggtcgggtcc	acatcacgcc	cgcgttggtg	accagcaggt	ggatgcgcgg	10080
gaagcgggtcg	cgcagttcct	cggcgccggc	acgcaccgac	gcgagacggg	aaagatccag	10140
ccgtctgacc	gtcagttgcg	ccgacggcac	ccggcttttg	atgcggggccg	ccgcggcgac	10200
cccgcgggtcc	ggatcgcgca	cggccagcac	cacgtggggcg	ccgtgccggg	cgagctcctg	10260
cgccaggtgc	agtccgatgc	cggagctggc	accggtgacc	accgcgggtgg	ttccgggtacg	10320
gtccgggaca	tcggcggcgc	tccagcgctg	ccgcgttctc	atcgggtcgtc	cctcccgggg	10380
gatgcgtcag	ccggcctggg	ccatcgcggc	ccggtagccg	ttggcgacga	tctgccgggc	10440
ggagtgctcg	tagtactcgt	cgtccttcgg	cagctccgtg	gcgagaccgc	tgacgtaccg	10500
gttgaacatg	cagaacgcgg	cggcgatcag	aacgggtgctg	tgcagagcgg	tgctgtccgc	10560
tccctcggcc	cgcgcgcagg	cgatcacccc	tgcggagacc	gggcgcgcgc	cgctctggac	10620
ctcggcggcg	acggccagca	gcgcgcgcgt	cctgcgcgtc	atgggcgcgg	tggcggggtc	10680
ggcgaggacg	gcctcgacga	gctgccggcc	tcccggcagc	tgcgcggcgg	cgaaggcccc	10740
gtgggaggcg	gcgcagaact	cgggtggagt	gagatgcgag	acgtacgccg	cgatgagctc	10800
gcgttgcccc	ggttccagcg	aggacggcgc	ccgcagcagg	gcgttcgcga	gatcgcccag	10860
cgggtgctcg	gtgccggggg	ggtgagccat	cagaccactg	atgccgggga	ggtcgttggtc	10920
gagtgtctatg	tggggcacgg	ctcttccttc	cgggtggacg	aggggcggac	ggcggcggat	10980
cagggccatt	cgacttcgtc	gtcggcggcc	gcgcagatgc	gggtgaaggg	ccattccacg	11040
tcttcccttc	ccgttgccga	gtgggcggag	gccgtggtga	agagggtgac	gagtccgaac	11100
gtgccgaaga	ggagggacag	tccggcaacg	tgaagtgcgg	tacccatgcg	agctcctagc	11160
gagggcggcg	tgaccgcggg	acggtgagac	ctcgtgatgc	caggaagcta	gcgaatcgga	11220
ctgagggtgg	caacgatatg	ccagactttg	gcaacttgcc	tgtgtatcag	ccggactgtc	11280
ggccgctggt	aaagacggaa	cggcgagatc	ccgcgaccgc	gtcgcagagc	agcagggtct	11340
gctcacccag	cgtcggggcg	gccagcatgt	cgcgtaccgg	gagcgtgacg	cccagctcgc	11400
ggttgatcct	gcggaccagc	cgggtgatga	gcagggagtc	gccgccgtgg	gcgaagaaat	11460
cagcaccttc	ggagggggtcc	gggaagccga	gcaggtcacc	ccagccgcgc	accagtacct	11520
ggcggatgtc	gccggtggtg	acgaccgtgc	gccgggagcc	ccgacgtgcc	gagcgcagcc	11580
gcgaggcatg	caccagcgcc	acctggtcgc	cgaggttgcg	ccgcgacagc	tcgcgcagcg	11640
acaccgtgac	gccgaacctc	tccgtgatcc	tgcggaccag	ccgcgtgac	agcagcgtgt	11700
ccccgccgcg	cgcgaagaaa	tccgaatgct	cggtgaggtc	ggagcggccg	aggagctcgc	11760
tccacgcgcc	gaccatgaac	tccccacgt	caccgagccg	gtgctcgtcg	ccgtcggggc	11820
ccttcggcgc	gccggatccc	gcggaacggt	tccggccgga	gacggcagag	cgggtcactgg	11880
tcactttcgc	cacctccagg	ggcatgtgtc	ggctgcatac	gcttcccgc	acggtagcgg	11940
agcacatggt	gcatggcaat	acctttccaa	gtcggtgcca	acctccttg	ccatccaccc	12000
actgcagttg	ggcgagatgt	gtaggcattc	gaggtcgcga	ggtttgccaa	gccgcgcgcg	12060
accggcatac	tctctggcac	aactggaatg	agtagcgtgg	caggccacgg	ggaccggggc	12120
gggccaggaa	ccttcgtcct	ccatctattc	gctggggcgt	gcacgtgttg	gagcagccat	12180
ctttcggccg	tcgcctgagg	cagctgagga	ccgagcgggg	tctttcccag	gccgcgctcg	12240
cgggggacgg	catgtctacg	ggctatctct	cgcgcctgga	gtcggggcgc	cggcagccct	12300
ccgatcgcgc	cgtcgcccac	ctggccggac	aactcggcat	cagcccgtcg	gagttcgaag	12360
ggtcccgggc	cacctcgtc	gcccagatcc	tctccctctc	cacttcctcg	gagtcgcagc	12420
agaccagtga	gcttctcgcc	gaggcggtag	gttccgcgca	tggccaggat	ccgatgctcc	12480
gctggcaggc	cctgtggctg	ctgggacagt	ggaagcgccg	gcacggcgac	tcggccggcg	12540
agcacggcta	cctccagcgt	ctggtgacgc	tgagttagga	gatcggcctg	gccgagttgc	12600
gcgcacgggc	cctgacccag	ttcgcccggg	cgtgcgggtg	actgggcgag	atcgttccgg	12660
cgggtggaggc	tgcgcgcgc	gcccaccggc	tcgcgggtgga	ccatgcgctg	tccagccagg	12720
acagggccgc	ttcgctgctg	gttctggtgt	cgggtggaggc	cgaggcggga	cggatgcccg	12780
acgcccggcg	ccacgccgac	gaactgaccg	tcttggtgag	gggacgggtcc	gacactctgt	12840
gggccgaggc	gttgtggacg	gcgggtgctg	tgaagggtgcg	gcagggcgag	ttcgccgcgg	12900
ccgaggtcct	tttccaggag	gctctggacg	ggtttcgacag	ccgggagaaac	ctgacgatct	12960
ggctgcggct	gcgcctcgcg	atggccgaac	tccacctgca	gaaacttctc	cccagaccgc	13020
acgcgcgcga	gctctgcac	gaggcggcgg	aggcggccct	tccctttgcc	cgcacatccg	13080
ctctggaaca	gtccctcgcc	gctctgcggg	cgcgcctcgc	cttccatgag	ggcaggttcg	13140
ccgatgcccg	cgcgttggtg	gagaggctcg	gcaggaccga	gctccggctg	ccctatcaga	13200
gccggatccg	cctggagggtc	ctcgggtcatc	agctgcgcac	cctgagcggg	gaggaggagg	13260
aaggcctggc	cggcctccag	ctcctggccg	aggaggcgca	ggagaactcc	aacatcaacc	13320
tcgccgcgga	gatctggcgg	ctcgcggcgg	aatgcctgat	gcgggcgcgc	gggaagggtcc	13380

gcggcgccac	cgggcggtga	cgccgcgcgc	gttcgcgagg	tccaccgcgc	cgccgtggcc	13440
accgccgtcg	gcgtgaggcg	ccggcggtg	ccgcccccca	cggttgctcg	cccttggtgg	13500
tgcattctgt	ggcacatgtg	tacctctac	acagtcaatt	gttgccaaaa	ttgtcgaacc	13560
gaatggcaat	tgttgccctt	tgctgaagag	gcgtgctgat	atgcaagtca	agtagcctcc	13620
tccgatctcg	ggcgcccata	tgggaaacat	cgagttgagc	ggcgatggcg	ttcgtcagtg	13680
ctgccgttct	ggccaggcaa	ctgatgtcga	tggggatggc	aagattttgc	cgaaaaccga	13740
tacattctct	tccgtcccgc	acagccttcg	ccccccgggt	gacactgctc	cgcatgggct	13800
ccggtttctc	gtcgcccggc	cgacggaccg	caccgtccgc	aacgaggcgc	cggtgtgctg	13860
ccgctgatgg	gcacagcggc	ctcgcccgca	gcaggttccc	accgagaaga	atgccgaggc	13920
ccagccgtga	accacgacat	gtcccagcgt	gccttgctgg	aggcggcggc	cgaggggctg	13980
cgggcggtcg	ccggcgacgc	gcggtgccgc	agcgcgctcg	ccgcgcctc	ctcggcattg	14040
agggacatgt	tctccccgc	cgcccgccgc	tacgtgctcg	cctcgaccgc	cgcggggttc	14100
ttcgagcagg	ctgtcgggct	gcgctcccgc	gggtaccggg	tgagcgcgga	gttcgtcggc	14160
cccgatcagg	gagccaccga	cgccctccac	gcggagcacg	tggtcgaaga	gcacctgagg	14220
ctgctcgatc	aggagccggc	ccctgaccgc	atcggtgtgg	acgtctccgc	gatcgccctc	14280
gcccactcgc	cgcagactgc	cctgcgcaac	accgggcggc	tggctgccgc	tcgggcgctc	14340
cgcgggagcg	aggctcgtct	gctcatggag	gggtccgagg	acatcgacac	cgtgctggcc	14400
gtccatgacg	ccctggtgaa	ccgttacgac	aacgtgggga	tcaccttca	ggcgcacctg	14460
caccgcaccg	tggacgacgc	catggcggtc	gcgggtcctg	gccgcaccgt	gcggctggtc	14520
atgggtctct	cgcccgagcc	tgccggcacc	gctctgtccc	ggggccccgc	tctggaggac	14580
cggtaccttg	acctcgcgga	gcttctcgtg	gaccgtggcg	tccggctgag	tctggccact	14640
ccggacgccg	aggctcctgg	cggggcgcag	gagcgtggtc	tgctcgaacg	cgccaggac	14700
atcgagatgc	tctacgggtg	gcggcccag	ctgctgcgcc	gccaccgggc	ggcgggccgc	14760
ccctgtcgca	tccacgcggc	ctacgggatg	aactggtggc	ttccccctgt	gcggaggctg	14820
gccgacaacc	cgccgatggg	gctcaacgcc	ctggccgaca	tcggccggga	ccgggagccc	14880
gtcgcccacc	aggcgtactg	acccgccccg	ggccgcgac	cgcggggcac	cgccccggg	14940
gcgcgggtca	gctcccggtc	gccgcgaact	gcccgggccc	gcgcctctcg	cccgcggg	15000
cccggtaggc	ctgggcatg	tccagccact	tctccgctc	ctgaccagac	gcggtcagg	15060
cgaggtcgtc	gcggtggcgc	cgccgggtga	ccagcaggca	gaagtctgtc	gcgggaccgc	15120
tgaccgtctc	ggtggcgctc	tcggggccga	ccgtccagac	ctcgcccgag	ggggcggtga	15180
gctcgaagcg	gaacggcgcg	gccggcgggg	tcagaccgtg	ggactcgtag	ccgaagtctc	15240
gtgtcagcca	ggcgaagtgc	acgatgttgc	gaagccgctc	ggtgggctg	cgccggacac	15300
ccagggcgct	ggcgacgtcc	tgcccggtgg	cgaacacctc	catgatccc	gcgcagccca	15360
gaacgaccgg	cggcagcggg	ttgaccagcc	acggaaccac	ctggccggcg	gggaccgcgg	15420
cgagcgccct	gaccgaggcc	cgccccatgc	cccggaagcg	ggtgagcagt	tcttgcggcg	15480
ggaagccctt	gaactgctgc	agagcccgct	tgaccgctcc	gtcgaagtgt	cctgccgcgg	15540
cgcccggtgac	ggccttgaac	tcttccggcg	ccgcgcgcgc	ggtcctggcc	aggttgaaga	15600
cgaaggtagg	gtgggcgatc	tggtcgggtg	cggtccagcc	gggcgcggc	gtcggagtgt	15660
tccaggcttc	gtcgtcgatc	ttctcgacca	gctgcgccag	ctcctcgatg	tcggtggcca	15720
ggtgcttagg	gacgtcgtcg	agcgaattca	tctcgtactt	ccttcaactg	gggtgttccg	15780
ggctgggacg	gatgtcccgc	cggttgggccc	ggcgccgggc	ggaagcgccg	tcgcgagcgc	15840
tcggcgacag	tcgctaggcg	gcgcgtcccc	cgtaggagcc	ggcccggtcg	gaataggcg	15900
cgagcgccct	ggccagggct	tcgggtatca	gggtcggcac	ggtcgcgcgt	ttggggccgc	15960
gcatgcaggc	gatgcgctgg	ctcccccgcg	ccaccagggt	ctcgccgcgc	tcgtcgccca	16020
gcttgatgta	gtcgaagggt	aactccagct	gggtctgcgc	cagctccgag	agcctcatcc	16080
ggatcgacag	ttcgtcgaag	gcggtgatct	ccgcgaagaa	ctcgcagtc	accttgagg	16140
tgaagagctt	gaggtcctcc	tggacctcgc	cgagcaccga	aggcgccctc	tccttgagaa	16200
agagttcccc	gcaacgcccc	tgccaacgaa	ggtagttgac	gtagtagacg	ttgccgacga	16260
ggttcgtctc	ctcgaagccg	acggtgtggc	ggagctcgaa	gtagtcagga	ttcgtcgcg	16320
tcataggtct	gtgcccttcg	tcgtcggggc	cggtcgtcgc	accgagttgc	gtgaagcaac	16380
tactgggtcg	cgatggcctg	cggggtcggt	ggcccgcgct	ccgggcggag	agtcggggcg	16440
gggtgccggc	cggcgcgggg	tcagcccgcg	gccgacggca	gcaggggaag	aacctctctg	16500
cgcccgctcg	tggagccgtc	gggggcccgt	gcgcgtagg	tgacggagat	accccggtc	16560
tgcgcggcgc	gcacgatccc	cggcacgcgc	cgttcggcga	gcgcgcgat	ggtcatcgcg	16620
ggattgaccg	tcagcgcgcc	gggaaccgac	gatccgtcgg	tgacgaagat	ccccgggtgg	16680
tcgcggagct	cgttgcgtgc	gtccagggcg	gatgtgtggg	ggtcgtcgcc	catccggcag	16740

gaggagagcg	ggtggacggt	gtaggcgccc	acgaggctgt	tgggtccaggg	catgaccttg	16800
gccaggccgt	ccttctccag	gatctccttg	acctcggcgt	cggatgcggc	ccaggcgccc	16860
aggggtgttct	tcgtcgggtc	gtagcgcagg	ttgccccggc	cgagcatctg	ctgggagatg	16920
cgggtgggct	taccggtggc	gggagggggg	ccgaagacgc	cttcgtttgtc	gtcctcgatc	16980
atcgtgaaga	tcgtgagcca	ggaggtccac	tgcttcaggga	tctccttctt	ctccttgccg	17040
aaccaggagg	ggcccgtggc	gccgggcacc	tgggcgagga	tcgtgccgag	gcccggcggg	17100
aagtagagct	gttccaggga	gtagcgggag	tactcgggca	acgagccgtc	cagcctgtcc	17160
cagctcgcca	cgggtgggccc	cttgccgatc	tggttggccg	cgtaggcgag	cccgtcgccc	17220
cgggtccaggc	cgaacagctc	ggccgccttg	gcctcgtcga	tgatggcggg	gttgagccgc	17280
tcgccgttgc	cggagaagta	gcgtccgacc	gctcgtggca	tggtgcccag	gtgggcctcg	17340
ctgcgctgga	ggatcaccgg	ggtcgcgccc	gcgcggcccg	ccatcaccac	gatcttcgcc	17400
tcgatgacgc	cgtcgcggcg	ctggaggcgg	tagtcgtcgt	cgtgcacgac	gttgtagtgc	17460
acccggtagg	agccgtcggg	ggtgcgcgag	aggtgctgga	cctcgtgcag	cgggcgggatg	17520
cgcgccccat	gggcgatggc	ggcgggcagg	tagttgacca	gcaaggactg	cttggcctcg	17580
aagcggcagc	cggccatcat	ccagttgcag	ttcacgcact	tgggtgttgtc	gatggcgacg	17640
gcgagggggg	tggcgggtgcg	gccggcgtgg	ttgcacgcgc	cggcccacag	tccgccggcg	17700
tagctcacgt	cgttccagtc	ctgccgggtc	acggagaggg	actcctcgac	acggtcgtac	17760
caggggtcca	gggttttcg	gctcaccgcc	tgcggccaca	tccggcgtec	tatggacccc	17820
tgcgggtcga	agacgaagcg	cggggcgcg	ggcatcgcg	cgaagtagac	gacgctgccg	17880
ccgcccacac	agttcccgcc	gaggatgctc	atgccgtccc	cgaccgtgaa	gtcgaacgcc	17940
ctcgtgtacg	aggagccgag	ttttagtctg	tgctcgaact	ccttgctctc	cagccacggc	18000
ccgcgttcca	ggacgggtgac	gtcggcgccc	cccgcgcgca	ggtggtaggc	ggcgatggca	18060
ccgccgaatc	cgtcgcgat	gacgaggacg	tccgtgcgct	cggccgtggg	gctcatgcgg	18120
ggctcccggg	ggacgtgggtg	tcgggggtgga	ggcgggcgaa	ctcacgccc	tagctgtaat	18180
ccttgaagcg	ccacaggccg	tcggcgctcc	gcatgctcag	gcccattggc	tccagtcccc	18240
gatggccgct	ctccatcgcc	tgtgccgtgt	tgaggtgcgc	ggccgaatcg	aaggccatgt	18300
tgcagaagag	ggacagcagc	acccagaact	ccttctcggg	gtggccctgg	gtcgtcagcc	18360
gctggatcag	cgcggcccg	tccgggtagt	cgagcgccac	gaaggcgggg	accgtcgggt	18420
cgggagccag	gcggcgctcc	gccgcgtagg	ccagcgcgtg	ctcgttcacc	aggcgacca	18480
ggtcgtccag	accctcgtgg	atgccggctg	catcccattg	caggagctcc	agggtcccc	18540
cctggacggc	gccaccgccc	gtggacaccc	ccgcgatggc	ccggtcgtcc	gcgaagcgct	18600
tctggccccg	cacgatcgtg	tccgcgtagg	cctccagggt	catggtcggg	atatcgccgt	18660
ccgggcccc	tcgctcattg	tcgtcgcgca	actcgtctc	cattctcgca	gtccggagtg	18720
ggatgccttg	tggcgaggag	aaagctaggt	tcgttcgacc	ggttcaagca	actagccaaa	18780
gtcagggcga	ccttgaaacc	gactccacgg	agttggcgcg	aagcggcgga	tggattacac	18840
gcgcgggcga	gcggctcact	agtctggccg	cacggatgtc	ttcatcacct	gcacgtggaa	18900
aagcttctgc	acgggcaccg	catgtggaag	tgagccctgg	tctcatgtct	tgggggaaac	18960
gtgaaaagtg	actctgccc	acgcgccgtg	gagcgatcac	gccgtgtcgt	acggatcgat	19020
gaactcattc	ccgcgatctc	cccgcgcctg	aacggaatcg	atcgttccca	tgtgcagcgc	19080
ctcgcgaccg	tgtacgcgtc	cctgccgcgc	gtcctggtgc	accgcccagc	catgcgggtc	19140
gtcgacggca	tgcaccgcat	cggcgcgggc	cgctgaagg	ggctggacac	ggtcgaggtc	19200
accttcttcg	agggcgccga	ggagcaggtg	ttcctgcgtt	cgtcgcggc	gaacatcacc	19260
aacggcctgc	cgttgtcggg	ggccgaccgc	aagaccgccc	cggcccgcac	tctggccctcc	19320
cacccgaccc	tgtccgaccg	cgcggctcgcc	gcacacgtcg	gcctcgacgc	caagaccgtg	19380
gcgggggtac	ggacgtgttc	agccgcgggt	tctccgctgc	tgaacatgcg	caccggggcg	19440
gacggccgcg	tccacccgtt	ggaccgcacc	gccgaacgcc	tgcacgcggc	cgcgctgctg	19500
acccaggacc	cgggactccc	gttgcgctcc	gtcgtcgagc	agacggggct	gtcgtggggc	19560
acggcccacg	acgtccgccc	tgggtgctg	cggggcgagg	acccggtccc	gcagaaccgg	19620
cagagcgcca	tgctggagcc	gggactcgcc	ccgcagaaga	aggcgacggc	caagccgccc	19680
gtcggccccg	ccgcccgtcc	ggtcccgaag	gtgcgcggcg	ccgtcgcggg	caggcgcccg	19740
gtgtcaccgc	ggtcccgggg	cccgtctggag	gcgtcgcgca	agctctccaa	cgacccctcc	19800
ctgcgccact	ccgaccaggg	gcgcgaactc	atgcgtgggc	tgcacaaccg	gttcgtcgtc	19860
gacgaggcgt	ggcgccggcg	gcgcggacgc	gtcccggccc	actgcgtcga	ctcgatggcg	19920
gagctggcgc	agcactgctc	ggacgcctgg	caccggttcg	ccgaggagat	ggttcggcgc	19980
cggcacagcg	ccgcggccga	cggctccgga	ctccgcacga	ctcagccaac	tcgccgttga	20040
cggcctactt	cgacagggag	ttacggtgac	cacgaacacc	atcgaggacg	cgggtccgccg	20100

```

ggtcgtcgag tacatgcacg tcaacctggg tcagaacctc acgatcgatg acatggcgcg 20160
cacggcgatg ttcagcaagt tccatttcac ccgcattctc cgccaagtca ccggtacctc 20220
tcccgggctg ttctgttcgg ccttacggat tcaggaggcc aagagacttc tcgtgcacac 20280
tgcactcagt gtggccgata tcagcagtcg ggtcgggtac agcagtgtcg gtactttcag 20340
ttctcgcttc aaggcctgtg tggggctttc cccgagcgcc tatcgcgact tcggcggggt 20400
gcagccgggt tttccctccg ccgcggcccg tctcaactcc accgcgcaca atccctccgt 20460
gcgcggccgc attcaactcc ccccggggtga caggcccgga aggatcttcg tgggcctgtt 20520
ccccggcagg atgcgccagg gccgcccggc gcgctggacc gtcattggaga gtcccggggc 20580
cttcgagctc cgggacgtgc ccgtgggcac ctggcacatc ctggctccact ccttccccgc 20640
cggacaccgg ccgcaccagc tcgactccga accgctgttg ctccgggcaca gcggaccgct 20700
cgtggtgcac cccggtgccc tgctccggcc ggccgacatc ctctgcgcg cgggtggacgc 20760
cctcgatcca ccggtcctgc tggcccactt ccgcgtggag agccgcctca cctcgccgta 20820
ctcaccgtca tcggtagccc tccgcgcac ccgcaggaga gcatgggttc ggcaaccgcc 20880
cgggtgtccg cgacggtacg cagatcgaga tcgcgggtga ccagggccgt gacgaacacc 20940
gcctccatca tcccgagggt gctgccgacg cagaaccggg gcccgcgcc gaacgggatg 21000
tacgcgtacc gcggccgggt ggcggtctgc cggggttcga accgctcggg gtcgaagcgc 21060
tcggggtcct cccacagccc cggatggcgg tgcattgatg acgggcagac cagcacatcc 21120
gatccggcgg acaccgtgta gccgcccacc acatcgcggt gctggggccac cctgggcagg 21180
atccc 21185

```

<210> 3

<211> 15

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

<400> 3

atgggcatga cgggt

15

<210> 4

<211> 15

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

<400> 4

ctagaggatc ccggg

15

<210> 5

<211> 15

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

<400> 5

atgccgcgga ttccc

15

<210> 6
 <211> 15
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 6
 tcagctgtcg atgtc 15

 <210> 7
 <211> 15
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 7
 atgaccatcg ccact 15

 <210> 8
 <211> 15
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 8
 tcagaggccg agcac 15

 <210> 9
 <211> 15
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 9
 atgagctcg tactg 15

 <210> 10
 <211> 15
 <212> DNA
 <213> Artificial Sequence

 <220>

<223> Description of Artificial Sequence: primer

<400> 10
ctaggagccg gtcgc 15

<210> 11
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 11
atgagcagca gcgcc 15

<210> 12
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 12
tcattcgtcg gctgc 15

<210> 13
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 13
gtgagggctc tgccg 15

<210> 14
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 14
tcagacggcg gaggg 15

<210> 15
<211> 15

<212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 15
 gtgagcgtca ccgac 15

 <210> 16
 <211> 15
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 16
 tcaacccgcc ctgcg 15

 <210> 17
 <211> 15
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 17
 atgaggatgc tggcg 15

 <210> 18
 <211> 15
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 18
 gtggctgtgc tcgca 15

 <210> 19
 <211> 15
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 19

atgaggatgc tgggtg 15

<210> 20
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 20
tcagccgacg gcgtc 15

<210> 21
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 21
gtgacagcag tcaag 15

<210> 22
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 22
tcatgtggcc ggttg 15

<210> 23
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 23
gtggagtact ggaac 15

<210> 24
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: primer

 <400> 24
 tcaggcctga ggggc 15

 <210> 25
 <211> 15
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 25
 gtgccccacg gtgca 15

 <210> 26
 <211> 15
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 26
 ctacagccct ccgag 15

 <210> 27
 <211> 15
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 27
 atgtcttcaa cccgt 15

 <210> 28
 <211> 15
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 28
 tcagccgcgc aggaa 15

 <210> 29

<211> 15
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 29
 atgctggaga aatgc 15

 <210> 30
 <211> 15
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 30
 tcagacgagc tcctt 15

 <210> 31
 <211> 15
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 31
 atggagtacg gcccc 15

 <210> 32
 <211> 15
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 32
 tcatgccgtg cgcac 15

 <210> 33
 <211> 15
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 33

atgagcggcg gcccg 15

<210> 34
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 34
tcacctcgcc ggacg 15

<210> 35
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 35
atgtcgttac gtcac 15

<210> 36
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 36
tcagccgaag gtcag 15

<210> 37
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 37
atgaaggcac ttgta 15

<210> 38
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: primer

 <400> 38
 tcaggccgcg atctc 15

 <210> 39
 <211> 15
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 39
 gtggacgtgt cagcg 15

 <210> 40
 <211> 15
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 40
 tcaggaccgc gcacc 15

 <210> 41
 <211> 15
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 41
 atgaagccga tcggg 15

 <210> 42
 <211> 15
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 42
 tcaggacgac ttggt 15

 <210> 43

<211> 15
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 43
 atgccttccc ccttc 15

<210> 44
 <211> 15
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 44
 tcaggtgcgc tcggc 15

<210> 45
 <211> 15
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 45
 gtgagagacg gccgg 15

<210> 46
 <211> 15
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 46
 tcacgtggtg atggc 15

<210> 47
 <211> 15
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 47

atgaccgacc agtgc 15

<210> 48
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 48
tcacagcaac tcctc 15

<210> 49
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 49
gtgagcttgt ggtct 15

<210> 50
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 50
tcaggccggt tcggc 15

<210> 51
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 51
gtgcgtccct tccgt 15

<210> 52
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: primer

 <400> 52
 tcagcggagc ggacg 15

 <210> 53
 <211> 15
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 53
 atgccagcac cgact 15

 <210> 54
 <211> 15
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 54
 tcagtcgttg ccgcg 15

 <210> 55
 <211> 15
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 55
 atgccagcac cgact 15

 <210> 56
 <211> 15
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 56
 tcagtcgttg ccgcg 15

 <210> 57

<211> 15
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 57
 atgaccaagc acgcc 15

 <210> 58
 <211> 15
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 58
 tcatacggcg gcgcc 15

 <210> 59
 <211> 15
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 59
 gtgagcgcac aactc 15

 <210> 60
 <211> 15
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 60
 tcacggctgt gcctg 15

 <210> 61
 <211> 15
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 61

atgtcttcaa cccgt 15

<210> 62
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 62
tcagccgcgc aggaa 15

<210> 63
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 63
atgacgacgt ccgac 15

<210> 64
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 64
tcaggaggtg aaggg 15

<210> 65
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 65
atggcattga ctcaa 15

<210> 66
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: primer

 <400> 66
 tcagcgcagc tggat 15

 <210> 67
 <211> 15
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 67
 atgacgcggc cggtg 15

 <210> 68
 <211> 15
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 68
 tcagcgggtg agccg 15

 <210> 69
 <211> 15
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 69
 gtgtccaccg tttcc 15

 <210> 70
 <211> 15
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 70
 tcactgcggt ccgga 15

 <210> 71

<211> 18
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 71
 gtgtgcccgg tgacagac 18

 <210> 72
 <211> 18
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 72
 tcagcccacg ggctggga 18

 <210> 73
 <211> 18
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 73
 gtgttgggcg atgaggac 18

 <210> 74
 <211> 18
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 74
 tcagaccgcg gacatctg 18

 <210> 75
 <211> 18
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 75

atggccggcc tggtcatg 18

<210> 76
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 76
tcaggaccgc agggtcac 18

<210> 77
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 77
gtggaccaga cgtctacg 18

<210> 78
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 78
tcatgcaggt gcagcgtg 18

<210> 79
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 79
atgaggccgc tcgttcgg 18

<210> 80
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: primer

 <400> 80
 tcatcccggc ccggcggc 18

 <210> 81
 <211> 18
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 81
 atgagaacgc ggcgacgc 18

 <210> 82
 <211> 18
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 82
 tcacggccgg aggcgtac 18

 <210> 83
 <211> 18
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 83
 gtgtatcagc cggactgt 18

 <210> 84
 <211> 18
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 84
 ctactcattc cagttgtg 18

 <210> 85

<211> 18
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 85
 atgtctacgg gctatctc 18

 <210> 86
 <211> 18
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 86
 tcagccgccc gtggcgcc 18

 <210> 87
 <211> 18
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 87
 atgttctccc ccgcccgc 18

 <210> 88
 <211> 18
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 88
 tcagtacgcc tgggtggc 18

 <210> 89
 <211> 18
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 89

atgaattcgc tcgacgac 18

<210> 90
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 90
tcagctcccg gtcgccgc 18

<210> 91
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 91
atgaccgcga cgaatcct 18

<210> 92
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 92
ctaggcggcg cgtcccgc 18

<210> 93
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 93
atgagcacca cggccgag 18

<210> 94
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: primer

 <400> 94
 tcagccgcgc gccgacgg 18

 <210> 95
 <211> 18
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 95
 atgaccctgg aggcctac 18

 <210> 96
 <211> 18
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 96
 gtgaaaagtg actctgcc 18

 <210> 97
 <211> 18
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 97
 gtgaccacga acaccatc 18

 <210> 98
 <211> 18
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 98
 tcatgcgggg ctcccggg 18

 <210> 99

<211> 18
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 99
 tcaacggcga gttggctg 18

 <210> 100
 <211> 18
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 100
 tcacccgcga tctcgatc 18

 <210> 101
 <211> 18
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 101
 tcacctcgcc gtactcac 18

 <210> 102
 <211> 23
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 102
 agtccatca agtcsatgrt cgg 23

 <210> 103
 <211> 27
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: primer

 <400> 103

ccggtgttsa csgcgtagaa ccaggcg

27

<210> 104

<211> 18

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

<220>

<221> modified_base

<222> (9)

<223> a, g, c or t

<400> 104

gacacvgcnt gytcbtcv

18

<210> 105

<211> 18

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

<220>

<221> modified_base

<222> (13)

<223> a, g, c or t

<400> 105

rtgsgcrttv gtnccrct

18

<210> 106

<211> 26

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

<400> 106

gcstcccsg acctgggctt cgactc

26

<210> 107

<211> 26

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

<400> 107
agsgasgasg agcaggcggt stcsac 26

<210> 108
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 108
csggsgssgc sggsttcacg gg 22

<210> 109
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 109
gggwrctggy rsggsccgta gttg 24

<210> 110
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 110
aggtggaggc gctcaccgag 20

<210> 111
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 111
gggcgtcagg ccgtaagaag 20

<210> 112
<211> 3035
<212> DNA

<213> Streptomyces globisporus

<220>

<221> CDS

<222> (101)..(1096)

<223> sgcA gene

<220>

<221> CDS

<222> (1143)..(2705)

<223> sgcB gene

<400> 112

ggatccggga agaccggaat tccgccccca gcccggtcga actcgtatcg ctccctggtag 60

aactgacgaa	gcgtcatcgc	cgtgacaagg	aggcggaccg	atg	agg	atg	ctg	gtg	115
				Met	Arg	Met	Leu	Val	
				1				5	

acg	ggc	gga	gcg	ggt	ttc	atc	ggc	tcg	cag	ttc	gtg	cgg	gcc	aca	ctg	163
Thr	Gly	Gly	Ala	Gly	Phe	Ile	Gly	Ser	Gln	Phe	Val	Arg	Ala	Thr	Leu	
			10					15						20		

cac	ggc	gag	ctg	ccg	ggt	tcc	gag	gac	gcc	cgg	gtg	acg	gtc	ctg	gac	211
His	Gly	Glu	Leu	Pro	Gly	Ser	Glu	Asp	Ala	Arg	Val	Thr	Val	Leu	Asp	
		25					30					35				

aag	ctg	acg	tac	tcc	ggc	aat	ccg	gcc	aac	ctc	acc	tcc	gtc	gcg	gcc	259
Lys	Leu	Thr	Tyr	Ser	Gly	Asn	Pro	Ala	Asn	Leu	Thr	Ser	Val	Ala	Ala	
		40				45					50					

cat	ccg	cgg	tac	acc	ttc	gtc	cag	ggc	gac	acc	gtc	gac	ccg	cgc	gtc	307
His	Pro	Arg	Tyr	Thr	Phe	Val	Gln	Gly	Asp	Thr	Val	Asp	Pro	Arg	Val	
	55					60					65					

gtc	gac	gag	gtg	gtc	gcc	ggc	cac	gac	gtc	atc	gtc	cac	ttc	gcg	gcg	355
Val	Asp	Glu	Val	Val	Ala	Gly	His	Asp	Val	Ile	Val	His	Phe	Ala	Ala	
70					75				80					85		

gag	tcg	cac	gtg	gac	cgc	tcg	atc	gac	acc	gcc	acc	cgg	ttc	gtc	acg	403
Glu	Ser	His	Val	Asp	Arg	Ser	Ile	Asp	Thr	Ala	Thr	Arg	Phe	Val	Thr	
			90					95					100			

acc	aac	gtg	ctc	ggg	acc	cag	acg	ctg	ctg	gaa	gcg	gct	ctc	cgg	cac	451
Thr	Asn	Val	Leu	Gly	Thr	Gln	Thr	Leu	Leu	Glu	Ala	Ala	Leu	Arg	His	
		105					110					115				

ggg	gtc	ggc	cgg	ttc	gtg	cac	gtg	tcg	acc	gac	gag	gtc	tac	ggg	tcg	499
Gly	Val	Gly	Arg	Phe	Val	His	Val	Ser	Thr	Asp	Glu	Val	Tyr	Gly	Ser	
	120					125					130					

atc	gcc	tcc	ggc	tca	tgg	acc	gag	gac	acc	ccg	ctc	gcc	ccc	aac	gtc	547
Ile	Ala	Ser	Gly	Ser	Trp	Thr	Glu	Asp	Thr	Pro	Leu	Ala	Pro	Asn	Val	
	135					140					145					

ccc tac gcg gcg tcg aag gcg ggt tcg gac ctg atg gcg ctc gcc tgg	595
Pro Tyr Ala Ala Ser Lys Ala Gly Ser Asp Leu Met Ala Leu Ala Trp	
150 155 160 165	
cac cgc acc cgg ggc ctg gac gtc gtc gtc acc cgg tgc acc aac aac	643
His Arg Thr Arg Gly Leu Asp Val Val Val Thr Arg Cys Thr Asn Asn	
170 175 180	
tac ggt ccc tac cag tac ccc gag aag gtg atc ccg ctc ttc gtc acc	691
Tyr Gly Pro Tyr Gln Tyr Pro Glu Lys Val Ile Pro Leu Phe Val Thr	
185 190 195	
aac atc ctc gac ggc ttg cgg gtg ccc ctg tac ggg gac ggc gcc cac	739
Asn Ile Leu Asp Gly Leu Arg Val Pro Leu Tyr Gly Asp Gly Ala His	
200 205 210	
cgc cgg gac tgg ctg cac gtg tcc gac cac tgc cgg gcc atc cag atg	787
Arg Arg Asp Trp Leu His Val Ser Asp His Cys Arg Ala Ile Gln Met	
215 220 225	
gtc atg aac tcc ggc cgg gcc ggg gag gtc tac cac atc ggc gcc gcc	835
Val Met Asn Ser Gly Arg Ala Gly Glu Val Tyr His Ile Gly Gly Gly	
230 235 240 245	
acc gaa ctc tcc aac gag gaa ctc acc ggc ctg ttg ctc acg gcg tgc	883
Thr Glu Leu Ser Asn Glu Glu Leu Thr Gly Leu Leu Leu Thr Ala Cys	
250 255 260	
ggc acc gac tgg tcc tgc gtg gac cgg gtg gcc gac cgg cag ggg cac	931
Gly Thr Asp Trp Ser Cys Val Asp Arg Val Ala Asp Arg Gln Gly His	
265 270 275	
gac cgc cgc tac tcg ctc gac atc acg aag atc cgg cag gaa ctg ggc	979
Asp Arg Arg Tyr Ser Leu Asp Ile Thr Lys Ile Arg Gln Glu Leu Gly	
280 285 290	
tac gag ccc ctg gtc gcc ttc gag gac ggc ctg gcc gcg acg gtg aag	1027
Tyr Glu Pro Leu Val Ala Phe Glu Asp Gly Leu Ala Ala Thr Val Lys	
295 300 305	
tgg tac cac gag aac cgt tcg tgg tgg cag ccg ctg aag gaa gcg gcc	1075
Trp Tyr His Glu Asn Arg Ser Trp Trp Gln Pro Leu Lys Glu Ala Ala	
310 315 320 325	
ggc ctc ctg gac gcc gtc ggc tgacggcagc caccgctagg aacaccccag	1126
Gly Leu Leu Asp Ala Val Gly	
330	
gaaaggagcc acctcc gtg aca gca gtc aag gag ccg acg tcc cgc gca gga	1178
Met Thr Ala Val Lys Glu Pro Thr Ser Arg Ala Gly	
335 340	
cgg cgg gag tgg atc gct ctc gtc gtc ctc tcc ttg ccc acg atg ctg	1226
Arg Arg Glu Trp Ile Ala Leu Val Val Leu Ser Leu Pro Thr Met Leu	
345 350 355 360	

ttg atg ctg gac atc aac gtc ctc atg ctg gcc ttg ccg cag ttg agc	1274
Leu Met Leu Asp Ile Asn Val Leu Met Leu Ala Leu Pro Gln Leu Ser	
365 370 375	
gag gat ctc ggc gcg agc agc acg caa cag ctg tgg atc acc gac atc	1322
Glu Asp Leu Gly Ala Ser Ser Thr Gln Gln Leu Trp Ile Thr Asp Ile	
380 385 390	
tac gga ttc gcg atc gcc ggc ttc ctg gtg acc atg ggc acc ctc ggc	1370
Tyr Gly Phe Ala Ile Ala Gly Phe Leu Val Thr Met Gly Thr Leu Gly	
395 400 405	
gac cgg atc ggc cgc cgc agg ctc ctg ctc ggg ggc gcg gcc gtc ttc	1418
Asp Arg Ile Gly Arg Arg Arg Leu Leu Leu Gly Gly Ala Ala Val Phe	
410 415 420	
gcg gtc gtg tcc gtc gtc gcc gcg ttc tcc gac agc gcg gcg atg ctc	1466
Ala Val Val Ser Val Val Ala Ala Phe Ser Asp Ser Ala Ala Met Leu	
425 430 435 440	
gtc gtc agc cgc gcc gtg ctc ggc gtc gcc ggg gcc acg gtg atg ccc	1514
Val Val Ser Arg Ala Val Leu Gly Val Ala Gly Ala Thr Val Met Pro	
445 450 455	
tcg acg ctc gcg ctc atc agc aac atg ttc gag gac ccc aag gag cgg	1562
Ser Thr Leu Ala Leu Ile Ser Asn Met Phe Glu Asp Pro Lys Glu Arg	
460 465 470	
ggc acc gcc atc gcc atg tgg gcg agc gcc atg atg gcc gga gtc gcc	1610
Gly Thr Ala Ile Ala Met Trp Ala Ser Ala Met Met Ala Gly Val Ala	
475 480 485	
ctc ggg ccc gcc gtc ggc ggc ctg gtc ctc gcc gcg ttc tgg tgg gga	1658
Leu Gly Pro Ala Val Gly Gly Leu Val Leu Ala Ala Phe Trp Trp Gly	
490 495 500	
tcg gtg ttc ctc atc gcc gtt ccg gtg atg ctg ctg gtg gtg gtc acc	1706
Ser Val Phe Leu Ile Ala Val Pro Val Met Leu Leu Val Val Val Thr	
505 510 515 520	
ggc ccc gtg ctg ctc acc gag tcc cgc gac ccg gac gcc gga cgg ctg	1754
Gly Pro Val Leu Leu Thr Glu Ser Arg Asp Pro Asp Ala Gly Arg Leu	
525 530 535	
gac ctg ctg agc gcg ggg ctc tcc ctc gcg acc gtg ctg ccg gtg atc	1802
Asp Leu Leu Ser Ala Gly Leu Ser Leu Ala Thr Val Leu Pro Val Ile	
540 545 550	
tac gga ctg aag gag ctg gcc cgg acc ggg tgg gac ccg ctc gcc gcc	1850
Tyr Gly Leu Lys Glu Leu Ala Arg Thr Gly Trp Asp Pro Leu Ala Ala	
555 560 565	
ggc gcg gtg gtc ctc ggc gtg atc ttc ggc gcg ctg ttc gtc cag cgc	1898
Gly Ala Val Val Leu Gly Val Ile Phe Gly Ala Leu Phe Val Gln Arg	
570 575 580	

cag cgg cgg ttg gcc gac ccc atg ctg gac ctc ggc ctc ttc gcc gac	1946
Gln Arg Arg Leu Ala Asp Pro Met Leu Asp Leu Gly Leu Phe Ala Asp	
585 590 595 600	
cgc acc ctg cgg gcg ggt ctg acg gtc agt ctg gtc aac gcc gtc atc	1994
Arg Thr Leu Arg Ala Gly Leu Thr Val Ser Leu Val Asn Ala Val Ile	
605 610 615	
atg ggc ggg acc gga ctg atg gtc gcc ctg tac ctc cag acg atc gcc	2042
Met Gly Gly Thr Gly Leu Met Val Ala Leu Tyr Leu Gln Thr Ile Ala	
620 625 630	
ggt cac tcc ccg ttg gcc gcc ggg ctg tgg ctg ctg atc ccg gcc tgc	2090
Gly His Ser Pro Leu Ala Ala Gly Leu Trp Leu Leu Ile Pro Ala Cys	
635 640 645	
atg ctc gtc gtg ggc gta cag ctg tgc aac ctg ctg gcc cag cgg atg	2138
Met Leu Val Val Gly Val Gln Leu Ser Asn Leu Leu Ala Gln Arg Met	
650 655 660	
ccc cct tcc cgg gtg ctg ctg ggg gga ctg ctg atc gcg gcc gtc gga	2186
Pro Pro Ser Arg Val Leu Leu Gly Gly Leu Leu Ile Ala Ala Val Gly	
665 670 675 680	
cag ctc ctg atc acc cag gtg gac acc gag gac acc gcc ctc ctc atc	2234
Gln Leu Leu Ile Thr Gln Val Asp Thr Glu Asp Thr Ala Leu Leu Ile	
685 690 695	
gcg gcc acc acc ctg atc tac ttc ggc gcc tca ccg gtg ggg ccg atc	2282
Ala Ala Thr Thr Leu Ile Tyr Phe Gly Ala Ser Pro Val Gly Pro Ile	
700 705 710	
acc acg ggc gcg atc atg gga gcc gcg ccc ccg gag aag gcg ggt gcc	2330
Thr Thr Gly Ala Ile Met Gly Ala Ala Pro Pro Glu Lys Ala Gly Ala	
715 720 725	
gcc tcg tcg ctg tcc gcc acc ggc ggc gag ttc gga gtg gcg ctc ggc	2378
Ala Ser Ser Leu Ser Ala Thr Gly Gly Glu Phe Gly Val Ala Leu Gly	
730 735 740	
atc gcg ggc ctg ggg agt ctg ggc acc gtc gtg tac agc gcc ggg gtc	2426
Ile Ala Gly Leu Gly Ser Leu Gly Thr Val Val Tyr Ser Ala Gly Val	
745 750 755 760	
gag gtg ccg gac gcg gcc ggg ccc gcc gac gcc gac gcc gcg cag gag	2474
Glu Val Pro Asp Ala Ala Gly Pro Ala Asp Ala Asp Ala Ala Gln Glu	
765 770 775	
agc atc gcc ggc gcc ctg cac acg gcc ggt cag ctg gca ccg ggc agc	2522
Ser Ile Ala Gly Ala Leu His Thr Ala Gly Gln Leu Ala Pro Gly Ser	
780 785 790	
gcc gac gcc ctg ctg gac tcc gcg cgc gcg gcc ttc acc agc ggc gtg	2570
Ala Asp Ala Leu Leu Asp Ser Ala Arg Ala Ala Phe Thr Ser Gly Val	
795 800 805	

cag tcc gtc gcc gcc gtc tgc gcc gtg ttc tcc ctg gcg ctc gcc gtc 2618
 Gln Ser Val Ala Ala Val Cys Ala Val Phe Ser Leu Ala Leu Ala Val
 810 815 820

ctc atc ggc acc cgg ctg cgg gac att tcc gcg atg gac cac ggg cac 2666
 Leu Ile Gly Thr Arg Leu Arg Asp Ile Ser Ala Met Asp His Gly His
 825 830 835 840

ggc gag gaa ccg gcc gag aac gac gct caa ccg gcc aca tgagcgact 2715
 Gly Glu Glu Pro Ala Glu Asn Asp Ala Gln Pro Ala Thr
 845 850

tccggagatg caacggccgc cgctcaggta tgaggatcac cttccgggggt gcacctgcac 2775

ggcaacggag gcgtagtgga gtactggaac agcacggcgg agaccatgcc ccgccaggaa 2835

ctcgaacagt ggaagtggcg caggctccag gccgccatgg accacgccag aaggctttcg 2895

cccttctggc gggaacgact ccccgagaac atcacctcca tggcggacta cgcggcgcgg 2955

gtgcctctcc tgcgcaaggc cgacctctc gccgcggaag ccgcgtctcc cccttacggc 3015

acctggccct cgctggatcc 3035

<210> 113

<211> 332

<212> PRT

<213> Streptomyces globisporus

<220>

<223> sgCA

<400> 113

Met Arg Met Leu Val Thr Gly Gly Ala Gly Phe Ile Gly Ser Gln Phe
 1 5 10 15

Val Arg Ala Thr Leu His Gly Glu Leu Pro Gly Ser Glu Asp Ala Arg
 20 25 30

Val Thr Val Leu Asp Lys Leu Thr Tyr Ser Gly Asn Pro Ala Asn Leu
 35 40 45

Thr Ser Val Ala Ala His Pro Arg Tyr Thr Phe Val Gln Gly Asp Thr
 50 55 60

Val Asp Pro Arg Val Val Asp Glu Val Val Ala Gly His Asp Val Ile
 65 70 75 80

Val His Phe Ala Ala Glu Ser His Val Asp Arg Ser Ile Asp Thr Ala
 85 90 95

Thr Arg Phe Val Thr Thr Asn Val Leu Gly Thr Gln Thr Leu Leu Glu
 100 105 110

Ala Ala Leu Arg His Gly Val Gly Arg Phe Val His Val Ser Thr Asp
 115 120 125
 Glu Val Tyr Gly Ser Ile Ala Ser Gly Ser Trp Thr Glu Asp Thr Pro
 130 135 140
 Leu Ala Pro Asn Val Pro Tyr Ala Ala Ser Lys Ala Gly Ser Asp Leu
 145 150 155 160
 Met Ala Leu Ala Trp His Arg Thr Arg Gly Leu Asp Val Val Val Thr
 165 170 175
 Arg Cys Thr Asn Asn Tyr Gly Pro Tyr Gln Tyr Pro Glu Lys Val Ile
 180 185 190
 Pro Leu Phe Val Thr Asn Ile Leu Asp Gly Leu Arg Val Pro Leu Tyr
 195 200 205
 Gly Asp Gly Ala His Arg Arg Asp Trp Leu His Val Ser Asp His Cys
 210 215 220
 Arg Ala Ile Gln Met Val Met Asn Ser Gly Arg Ala Gly Glu Val Tyr
 225 230 235 240
 His Ile Gly Gly Gly Thr Glu Leu Ser Asn Glu Glu Leu Thr Gly Leu
 245 250 255
 Leu Leu Thr Ala Cys Gly Thr Asp Trp Ser Cys Val Asp Arg Val Ala
 260 265 270
 Asp Arg Gln Gly His Asp Arg Arg Tyr Ser Leu Asp Ile Thr Lys Ile
 275 280 285
 Arg Gln Glu Leu Gly Tyr Glu Pro Leu Val Ala Phe Glu Asp Gly Leu
 290 295 300
 Ala Ala Thr Val Lys Trp Tyr His Glu Asn Arg Ser Trp Trp Gln Pro
 305 310 315 320
 Leu Lys Glu Ala Ala Gly Leu Leu Asp Ala Val Gly
 325 330

<210> 114

<211> 521

<212> PRT

<213> Streptomyces globisporus

<220>

<223> sgcB

<400> 114

Met Thr Ala Val Lys Glu Pro Thr Ser Arg Ala Gly Arg Arg Glu Trp
 1 5 10 15

Ile Ala Leu Val Val Leu Ser Leu Pro Thr Met Leu Leu Met Leu Asp

20										25										30										
Ile	Asn	Val	Leu	Met	Leu	Ala	Leu	Pro	Gln	Leu	Ser	Glu	Asp	Leu	Gly															
		35					40					45																		
Ala	Ser	Ser	Thr	Gln	Gln	Leu	Trp	Ile	Thr	Asp	Ile	Tyr	Gly	Phe	Ala															
	50					55					60																			
Ile	Ala	Gly	Phe	Leu	Val	Thr	Met	Gly	Thr	Leu	Gly	Asp	Arg	Ile	Gly															
65					70					75					80															
Arg	Arg	Arg	Leu	Leu	Leu	Gly	Gly	Ala	Ala	Val	Phe	Ala	Val	Val	Ser															
				85					90					95																
Val	Val	Ala	Ala	Phe	Ser	Asp	Ser	Ala	Ala	Met	Leu	Val	Val	Ser	Arg															
		100						105					110																	
Ala	Val	Leu	Gly	Val	Ala	Gly	Ala	Thr	Val	Met	Pro	Ser	Thr	Leu	Ala															
	115						120					125																		
Leu	Ile	Ser	Asn	Met	Phe	Glu	Asp	Pro	Lys	Glu	Arg	Gly	Thr	Ala	Ile															
	130					135					140																			
Ala	Met	Trp	Ala	Ser	Ala	Met	Met	Ala	Gly	Val	Ala	Leu	Gly	Pro	Ala															
145					150				155					160																
Val	Gly	Gly	Leu	Val	Leu	Ala	Ala	Phe	Trp	Trp	Gly	Ser	Val	Phe	Leu															
			165					170					175																	
Ile	Ala	Val	Pro	Val	Met	Leu	Leu	Val	Val	Val	Thr	Gly	Pro	Val	Leu															
		180					185					190																		
Leu	Thr	Glu	Ser	Arg	Asp	Pro	Asp	Ala	Gly	Arg	Leu	Asp	Leu	Leu	Ser															
	195					200					205																			
Ala	Gly	Leu	Ser	Leu	Ala	Thr	Val	Leu	Pro	Val	Ile	Tyr	Gly	Leu	Lys															
	210					215				220																				
Glu	Leu	Ala	Arg	Thr	Gly	Trp	Asp	Pro	Leu	Ala	Ala	Gly	Ala	Val	Val															
225					230				235					240																
Leu	Gly	Val	Ile	Phe	Gly	Ala	Leu	Phe	Val	Gln	Arg	Gln	Arg	Arg	Leu															
			245					250					255																	
Ala	Asp	Pro	Met	Leu	Asp	Leu	Gly	Leu	Phe	Ala	Asp	Arg	Thr	Leu	Arg															
		260					265					270																		
Ala	Gly	Leu	Thr	Val	Ser	Leu	Val	Asn	Ala	Val	Ile	Met	Gly	Gly	Thr															
	275					280					285																			
Gly	Leu	Met	Val	Ala	Leu	Tyr	Leu	Gln	Thr	Ile	Ala	Gly	His	Ser	Pro															
	290				295					300																				
Leu	Ala	Ala	Gly	Leu	Trp	Leu	Leu	Ile	Pro	Ala	Cys	Met	Leu	Val	Val															
305				310				315						320																

Gly Val Gln Leu Ser Asn Leu Leu Ala Gln Arg Met Pro Pro Ser Arg
 325 330 335
 Val Leu Leu Gly Gly Leu Leu Ile Ala Ala Val Gly Gln Leu Leu Ile
 340 345 350
 Thr Gln Val Asp Thr Glu Asp Thr Ala Leu Leu Ile Ala Ala Thr Thr
 355 360 365
 Leu Ile Tyr Phe Gly Ala Ser Pro Val Gly Pro Ile Thr Thr Gly Ala
 370 375 380
 Ile Met Gly Ala Ala Pro Pro Glu Lys Ala Gly Ala Ala Ser Ser Leu
 385 390 395 400
 Ser Ala Thr Gly Gly Glu Phe Gly Val Ala Leu Gly Ile Ala Gly Leu
 405 410 415
 Gly Ser Leu Gly Thr Val Val Tyr Ser Ala Gly Val Glu Val Pro Asp
 420 425 430
 Ala Ala Gly Pro Ala Asp Ala Asp Ala Ala Gln Glu Ser Ile Ala Gly
 435 440 445
 Ala Leu His Thr Ala Gly Gln Leu Ala Pro Gly Ser Ala Asp Ala Leu
 450 455 460
 Leu Asp Ser Ala Arg Ala Ala Phe Thr Ser Gly Val Gln Ser Val Ala
 465 470 475 480
 Ala Val Cys Ala Val Phe Ser Leu Ala Leu Ala Val Leu Ile Gly Thr
 485 490 495
 Arg Leu Arg Asp Ile Ser Ala Met Asp His Gly His Gly Glu Glu Pro
 500 505 510
 Ala Glu Asn Asp Ala Gln Pro Ala Thr
 515 520

<210> 115

<211> 329

<212> PRT

<213> Saccharopolyspora erythraea

<400> 115

Met Arg Val Leu Val Thr Gly Gly Ala Gly Phe Ile Gly Ser His Tyr
 1 5 10 15

Val Arg Gln Leu Leu Gly Gly Ala Tyr Pro Ala Phe Ala Gly Ala Asp
 20 25 30

Val Val Val Leu Asp Lys Leu Thr Tyr Ala Gly Asn Glu Glu Asn Leu
 35 40 45

Arg Pro Val Ala Asp Asp Pro Arg Phe Arg Phe Val Arg Gly Asp Ile

50	55	60
Cys Glu Trp Asp Val Val Ser Glu Val Met Arg Glu Val Asp Val Val		
65	70	75 80
Val His Phe Ala Ala Glu Thr His Val Asp Arg Ser Ile Leu Gly Ala		
	85	90 95
Ser Asp Phe Val Val Thr Asn Val Val Gly Thr Asn Thr Leu Leu Gln		
	100	105 110
Gly Ala Leu Ala Ala Asn Val Ser Lys Phe Val His Val Ser Thr Asp		
115	120	125
Glu Val Tyr Gly Thr Ile Glu His Gly Ser Trp Pro Glu Asp His Leu		
130	135	140
Leu Glu Pro Asn Ser Pro Tyr Ser Ala Ala Lys Ala Gly Ser Asp Leu		
145	150	155 160
Ile Ala Arg Ala Tyr His Arg Thr His Gly Leu Pro Val Cys Ile Thr		
	165	170 175
Arg Cys Ser Asn Asn Tyr Gly Pro Tyr Gln Phe Pro Glu Lys Val Leu		
	180	185 190
Pro Leu Phe Ile Thr Asn Leu Met Asp Gly Arg Arg Val Pro Leu Tyr		
	195	200 205
Gly Asp Gly Leu Asn Val Arg Asp Trp Leu His Val Thr Asp His Cys		
210	215	220
Arg Gly Ile Gln Leu Val Ala Glu Ser Gly Arg Ala Gly Glu Ile Tyr		
225	230	235 240
Asn Ile Gly Gly Gly Thr Glu Leu Thr Asn Lys Glu Leu Thr Glu Arg		
	245	250 255
Val Leu Glu Leu Met Gly Gln Asp Trp Ser Met Val Gln Pro Val Thr		
	260	265 270
Asp Arg Lys Gly His Asp Arg Arg Tyr Ser Val Asp His Thr Lys Ile		
	275	280 285
Ser Glu Glu Leu Gly Tyr Glu Pro Val Val Pro Phe Glu Arg Gly Leu		
290	295	300
Ala Glu Thr Ile Glu Trp Tyr Arg Asp Asn Arg Ala Trp Trp Glu Pro		
305	310	315 320
Leu Lys Ser Ala Pro Asp Gly Gly Lys		
	325	

<210> 116

<211> 333
 <212> PRT
 <213> Streptomyces fradiae

<400> 116

Met	Arg	Val	Leu	Val	Thr	Gly	Gly	Ala	Gly	Phe	Ile	Gly	Ser	His	Phe
1				5					10					15	
Thr	Gly	Gln	Leu	Leu	Thr	Gly	Ala	Tyr	Pro	Asp	Leu	Gly	Ala	Thr	Arg
			20					25					30		
Thr	Val	Val	Leu	Asp	Lys	Leu	Thr	Tyr	Ala	Gly	Asn	Pro	Ala	Asn	Leu
		35					40					45			
Glu	His	Val	Ala	Gly	His	Pro	Asp	Leu	Glu	Phe	Val	Arg	Gly	Asp	Ile
	50					55						60			
Ala	Asp	His	Gly	Trp	Trp	Arg	Arg	Leu	Met	Glu	Gly	Val	Gly	Leu	Val
65					70					75					80
Val	His	Phe	Ala	Ala	Glu	Ser	His	Val	Asp	Arg	Ser	Ile	Glu	Ser	Ser
				85					90					95	
Glu	Ala	Phe	Val	Arg	Thr	Asn	Val	Glu	Gly	Thr	Arg	Val	Leu	Leu	Gln
			100					105					110		
Ala	Ala	Val	Asp	Ala	Gly	Val	Gly	Arg	Phe	Val	His	Ile	Ser	Thr	Asp
		115					120					125			
Glu	Val	Tyr	Gly	Ser	Ile	Ala	Glu	Gly	Ser	Trp	Pro	Glu	Asp	His	Pro
	130					135					140				
Val	Ala	Pro	Asn	Ser	Pro	Tyr	Ala	Ala	Thr	Lys	Lys	Ala	Ser	Asp	Leu
145					150					155					160
Leu	Ala	Leu	Ala	Tyr	His	Arg	Thr	Tyr	Gly	Leu	Asp	Val	Arg	Val	Thr
				165					170					175	
Arg	Cys	Ser	Asn	Asn	Tyr	Gly	Pro	Arg	Gln	Tyr	Pro	Glu	Lys	Ala	Val
			180					185					190		
Pro	Leu	Phe	Thr	Thr	Asn	Leu	Leu	Asp	Gly	Leu	Pro	Val	Pro	Leu	Tyr
		195					200					205			
Gly	Asp	Gly	Gly	Asn	Thr	Arg	Glu	Trp	Leu	His	Val	Asp	Asp	His	Cys
	210					215					220				
Arg	Gly	Val	Ala	Leu	Val	Gly	Ala	Gly	Gly	Arg	Pro	Gly	Val	Ile	Tyr
225					230					235					240
Asn	Ile	Gly	Gly	Gly	Thr	Glu	Leu	Thr	Asn	Ala	Glu	Leu	Thr	Asp	Arg
				245					250					255	
Ile	Leu	Glu	Leu	Cys	Gly	Ala	Asp	Arg	Ser	Ala	Leu	Arg	Arg	Val	Ala
			260					265					270		

Asp Arg Pro Gly His Asp Arg Arg Tyr Ser Val Asp Thr Thr Lys Ile
 275 280 285

Arg Glu Glu Leu Gly Tyr Ala Pro Arg Thr Gly Ile Thr Glu Gly Leu
 290 295 300

Ala Gly Thr Val Ala Trp Tyr Arg Asp Asn Arg Ala Trp Trp Glu Pro
 305 310 315 320

Leu Lys Arg Ser Pro Gly Gly Arg Glu Leu Glu Arg Ala
 325 330

<210> 117

<211> 331

<212> PRT

<213> Streptomyces argillaceus

<400> 117

Met Thr Thr Thr Ser Ile Leu Val Thr Gly Gly Ala Gly Phe Ile Gly
 1 5 10 15

Ser His Tyr Val Arg Thr Leu Leu Gly Pro Arg Gly Val Pro Asp Val
 20 25 30

Thr Val Thr Val Leu Asp Lys Leu Thr Tyr Ala Gly Thr Leu Thr Asn
 35 40 45

Leu Ala Glu Val Ser Asp Ser Asp Arg Phe Arg Phe Val Arg Gly Asp
 50 55 60

Ile Cys Asp Ala Pro Leu Val Asp Asp Leu Leu Ala Val His Asp Gln
 65 70 75 80

Val Val His Phe Ala Ala Glu Ser His Val Asp Arg Ser Ile Leu Gly
 85 90 95

Ala Ala Asp Phe Val Arg Thr Asn Val Thr Gly Thr Gln Thr Leu Leu
 100 105 110

Asp Ala Ala Leu Arg Gln Gly Ile Glu Thr Phe Val His Ile Ser Thr
 115 120 125

Asp Glu Val Tyr Gly Ser Ile Asp Ala Gly Ser Trp Pro Glu Thr Ala
 130 135 140

Pro Val Ser Pro Asn Ser Leu Tyr Ser Ala Ala Lys Ala Ser Ser Asp
 145 150 155 160

Leu Val Ala Leu Ala Tyr His Arg Thr His Gly Leu Asp Val Arg Val
 165 170 175

Thr Arg Cys Ser Asn Asn Tyr Gly Ser His Gln Phe Pro Glu Lys Val
 180 185 190

Ile Pro Leu Phe Val Thr Ser Leu Leu Asp Gly Arg Glu Val Pro Leu

195						200						205					
Tyr	Gly	Asp	Gly	Thr	Asn	Val	Arg	Asp	Trp	Leu	His	Val	Asp	Asp	His		
210						215						220					
Val	Arg	Ala	Ile	Glu	Leu	Val	Arg	Thr	Gly	Gly	Arg	Ala	Gly	Glu	Val		
225				230				235				240					
Tyr	Asn	Ile	Gly	Gly	Gly	Thr	Glu	Leu	Ser	Asn	Lys	Glu	Leu	Thr	Gln		
			245						250			255					
Leu	Leu	Leu	Asp	Ala	Cys	Gly	Ala	Gly	Trp	Asp	Arg	Val	Arg	Tyr	Val		
			260						265			270					
Thr	Asp	Arg	Lys	Gly	His	Asp	Arg	Arg	Tyr	Ser	Val	Asp	Cys	Thr	Lys		
275						280						285					
Ile	Arg	Arg	Glu	Leu	Gly	Tyr	Arg	Pro	Ala	Arg	Glu	Phe	Gly	Asp	Ala		
290				295				300									
Leu	Ala	Glu	Thr	Val	Ala	Trp	Tyr	Arg	His	His	Arg	Ala	Trp	Trp	Glu		
305				310				315				320					
Pro	Leu	Thr	Arg	Ala	Tyr	Gly	Ala	Val	Ala	Ala							
			325						330								

<210> 118

<211> 6

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: 6-His tag

<400> 118

His His His His His His

1

5